Data General

How to Generate Your DOS System

093-000222-01

How to Generate Your DOS System

093-000222-01

For the latest enhancements, cautions, documentation changes, and other information on this product, please see the Release Notice (085-series) supplied with the software.

Ordering No. 093-000222
©Data General Corporation, 1978, 1979
All Rights Reserved
Printed in the United States of America
Revision 01, September 1979
Licensed Material - Property of Data General Corporation

NOTICE

Data General Corporation (DGC) has prepared this manual for use by DGC personnel, licensees, and customers. The information contained herein is the property of DGC and shall not be reproduced in whole or in part without DGC prior written approval.

DGC reserves the right to make changes without notice in the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented, including but not limited to typographical, arithmetic, or listing errors.

Data General Corporation (DGC) currently does not supply double-density diskette units, but may possibly supply them in the future. DGC currently does supply single-density diskette units. This manual contains references to both double- and single-density diskette units, but you should ignore references to double-density units unless and until DGC supplies such units. In no event should you assume that DGC will eventually supply double-density diskette units.

How to Generate Your DOS System
093-000222

Revision History:

Original Release - November 1978
First Revision - September 1979 (DOS rev 3.20)

A vertical bar or an asterisk in the margin indicates substantive change or deletion, respectively, from revision 00.

The following are trademarks of Data General Corporation, Westboro, Massachusetts:

U.S. Registered Trademarks			Trademarks
CONTOUR I	INFOS	NOVALITE	DASHER
DATAPREP	NOVA	SUPERNOVA	DG/L
ECLIPSE	NOVADISC		microNOVA

Preface

Before you can do anything useful with your Data General equipment, you must have an operating system up and running. This manual tells you how to bring up an operating system -- specifically, our Disk Operating System -- on a Data General microNOVA™ or NOVA® computer.

This manual assumes only that your computer, diskette drives(s), disk drive(s) (if any), and other peripherals are connected; i.e., that you are starting from scratch. If you already have a DOS system running, go directly to Chapter 6 to generate other tailored DOS systems. The procedures described in earlier chapters apply only to your first DOS system.

Starting from scratch, the first part of the system generation involves checking the disks or diskettes you will use, and bringing up the DOS starter system. These steps vary, depending on the type of computer, disk, and/or diskette drive you have. We describe them in Chapters 2 through 5.

After you have the starter system running, you'll use it to generate a DOS system tailored to your own needs. We describe this in Chapter 6.

This manual is organized as follows:

Chapter 1 introduces DOS, tells you about console control characters, defines possible hardware configurations, and helps you identify the one you have.

Chapter 2 explains preparing for system generation on a microNOVA computer and hard disk.

Chapter 3 explains preparing for system generation on a NOVA computer with a hard disk.

Chapter 4 describes preparing for system generation on a diskette-based microNOVA system.

Chapter 5 explains preparing for system generation on a diskette-based NOVA system.

Chapter 6 leads you step by step through the system generation procedure (SYSGEN).

Chapter 7 tells you what to do after system generation on a hard-disk system.

Chapter 8 tells you what to do after system generation on a diskette-based system.

Chapter 9 names and describes the utility programs that Data General supplies with DOS software.

Chapter 10 covers the details of the DOS disk initializer program, DOSINIT.SV.

Appendix A describes common error messages that you might receive during the system generation process, and how to correct the causes.

In summary:

- If your hardware includes a microNOVA computer and hard disk, read Chapters 1, 2, 6, 7 -- optionally Chapters 9, 10, and, if need arises, Appendix A.
- If you have a NOVA computer and hard disk, read Chapters 1, 3, 6, 7, and optionally, Chapters 9, 10, and Appendix A.
- If you have diskettes only and a microNOVA computer, read Chapters 1, 4, 6, 8, and, optionally, Chapters 9, 10, and Appendix A.
- With diskettes only, and a NOVA machine, read Chapters 1, 5, 6, 8, and, optionally, Chapters 9, 10, and Appendix A.

Within this manual, the word *disk* means either disk or diskette; *diskette* means only diskette.

Licensed Material-Property of Data General Corporation

Reader, Please Note:

We use these conventions for command formats in this manual:

COMMAND required *[optional]* ...

Where	Means
COMMAND	You must enter the command (or its accepted abbreviation) as shown.
required	You must enter some argument (such as a filename). Sometimes, we use: $\{\text{required}_1 \atop \text{required}_2\}$ which means you must enter *one* of the arguments. Don't enter the braces; they only set off the choice.
[optional]	You have the option of entering this argument. Don't enter the brackets; they only set off what's optional.
...	You may repeat the preceding entry or entries. The explanation will tell you exactly what you may repeat.

Additionally, we use certain symbols in special ways:

Symbol	Means
)	Press the RETURN key on your terminal's keyboard.
□	Be sure to put a space here. (We use this only when we must; normally, you can see where to put spaces.)

All numbers are decimal unless we indicate otherwise; e.g., 35_8.

Finally, in examples we use

THIS TYPEFACE TO SHOW YOUR ENTRY)
THIS TYPEFACE FOR SYSTEM QUERIES AND RESPONSES.

R is the RDOS/DOS CLI prompt.

End of Preface

Licensed Material-Property of Data General Corporation

Contents

Chapter 1 - Introduction

What is DOS? 1-1
Control Characters and BREAK Key 1-1
Identifying Your Computer and Disk Drives 1-1
microNOVA and NOVA Computers 1-2
    microNOVA Computers 1-2
    NOVA Computers 1-2
Disk and Diskette Drives 1-4
    Hard Disks 1-4
    Diskette Drives 1-4
Inserting and Removing a Diskette 1-8
Inserting a Removable Disk Cartridge 1-9
Let's Get Started 1-9

Chapter 2 - Preparing to Generate a DOS System with microNOVA and Hard-Disk Hardware

Multiple Diskette Drives 2-1
The System Diskette(s) 2-1
Running DOSINIT 2-2
Installing the Bootstrap Root 2-8
Installing the DOS Starter System 2-8
The Next Steps 2-9

Chapter 3 - Preparing to Generate a DOS System with NOVA and Hard-Disk Hardware

Multiple Diskette Drives 3-1
The System Diskette(s) 3-1
Running DOSINIT 3-3
Installing the Bootstrap Root 3-7
Installing the DOS Starter System 3-8
The Next Steps 3-9

Chapter 4 - Preparing for System Generation with Diskette-Based microNova Hardware

The System Diskette(s) 4-1
Diskette Drive Numbers 4-2
Running DOSINIT 4-2
Installing the Bootstrap Root 4-6
Bringing Up the DOS Starter System 4-7

Licensed Material-Property of Data General Corporation

Chapter 5 - Preparing for System Generation with Diskette-Based NOVA Hardware

The System Diskette(s) 5-1
Diskette Drive Numbers 5-2
Running DOSINIT 5-2
Installing the Bootstrap Root 5-6
Bringing Up the DOS Starter System 5-7

Chapter 6 - Generating a Tailored DOS System

Multiplexors 6-1
SYSGEN Command 6-1
SYSGEN Dialog 6-1
Testing Your New System - Hard Disks and Double-Density Diskettes 6-8
Testing Your New System - Single-Density Diskettes 6-8
The Next Steps 6-9
How Much Memory Does DOS Use? 6-9

Chapter 7 - After SYSGEN -- Hard-Disk Systems

Starting Up DOS (Bootstrapping) 7-1
    BOOT Command 7-2
Shutting Down DOS 7-3
Full Initialization 7-3
Accessing Other Disks 7-4
    Using the Fixed Disk (Dual-Platter Subsystems Only) 7-4
Backing Up Your Files 7-4
    Preparing a Diskette and Copying Files to It 7-4
Generating Other DOS Systems 7-6
    Generating a Diskette-Based DOS System to Run on a Different Machine 7-6

Licensed Material-Property of Data General Corporation

Chapter 8 - After SYSGEN -- Diskette-Based Systems

Starting Up DOS (Bootstrapping) 8-1
BOOT Command 8-3
Shutting Down DOS 8-3
Full Initialization 8-3
Disk Access Overview 8-4
Backing Up Your Files 8-4
Preparing a Diskette and Copying Files to It 8-4
Loading the Utilities (Single Density Only) 8-6
Optimizing Your System Diskette 8-7
Managing Diskette Space 8-8
The Link Entry 8-8
Listing File 8-8
Moving Files 8-8
File Housecleaning 8-9
Backing Up Your Files 8-9
System Speed 8-9
Generating Other DOS Systems 8-10
Generating a System to Run on a Different Machine 8-10

Chapter 9 - DOS Utilities

Chapter 10 - The DOSINIT Initializer

Initial Dialog 10-1
FULL Command 10-3
PARTIAL Command 10-5
VERIFY Command 10-5
LIST Command 10-6
DISK Command 10-6
COPY and DUPLICATE Commands 10-6
FRAME Command 10-8
REMAP Command 10-8
ENTER Command 10-9
STOP Command 10-10

Appendix A - Errors and Error Messages

Licensed Material-Property of Data General Corporation

Tables

Table	Caption	
1-1	Computer/Disk Configurations	1-7
2-1	Programs Used in System Generation	2-2
2-2	microNOVA Diskette Device Codes and Names	2-3
2-3	microNOVA Hard-Disk Model Numbers and Unit Names	2-5
3-1	Programs Used in System Generation	3-2
3-2	NOVA Hard Disk Model Numbers and Unit Names	3-5
4-1	Programs Used in System Generation	4-2
4-2	microNOVA Diskette Device Codes, Model Numbers, and Diskette Names	4-3
5-1	Programs Used in System Generation	5-2
5-2	NOVA Diskette Device Codes, Model Numbers, and Diskette Names	5-3
6-1	DOS Rev 3.20 Memory Requirements	6-10
7-1	Disk/Diskette Codes and Names After SYSGEN	7-2
7-2	Generating a Diskette-Based DOS System to Run on a Different Machine	7-7
8-1	Diskette Device Codes and Names After SYSGEN	8-2
9-1	DOS Utilities	9-1
10-1	Disk Model Numbers and Unit Names for DOSINIT	10-2
A-1	Errors, Explanations, and Recovery Action	A-1

Licensed Material-Property of Data General Corporation

Illustrations

Figure	Caption	
1-1	microNOVA and NOVA Computer Front Panels	1-3
1-2	Disk and Diskette Drives	1-5
1-3	Affixing a Label to a Diskette	1-8
1-4	Inserting a Diskette	1-8
2-1	Running DOSINIT.SV on a Hard Disk microNOVA System	2-6
2-2	Installing the microNOVA Starter System on a Hard Disk	2-10
3-1	Running DOSINIT.SV on a Hard Disk NOVA	3-6
3-2	Installing the NOVA Starter System on a Hard Disk	3-9
4-1	Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (microNOVA)	4-4
4-2	Preparing for First SYSGEN on a Diskette-Based microNOVA Configuration	4-8
5-1	Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (NOVA)	5-4
5-2	Preparing for First SYSGEN on a Diskette-Based NOVA Configuration	5-8
6-1	microNOVA Sealed Hard-Disk SYSGEN Dialog	6-10
6-2	NOVA Hard-Disk Dual Platter Subsystem SYSGEN Dialog	6-11
6-3	Double-Density Diskette-Based microNOVA SYSGEN Dialog	6-12
6-4	Single-Density Diskette-Based NOVA SYSGEN Dialog	6-12
8-1	Using Link Entries to Save Space	8-9
8-2	Generating a System to Run on a Different Machine	8-10
10-1	Copying a Disk	10-7

Licensed Material-Property of Data General Corporation

Chapter 1
Introduction

What is DOS?

Data General's Disk Operating System lets you manipulate disk- or diskette-stored data and program files on Data General microNOVA™ or NOVA® computers. You can communicate with DOS by typing in commands directly on your computer's system console, or by coding calls to the DOS software from within your own programs.

DOS is a compatible subset of the Real-time Disk Operating System (RDOS). It interfaces perfectly with both RDOS and DG's memory-resident Real-Time Operating System (RTOS).

In addition to its own assembly-language interface, DOS supports FORTRAN IV and both single- and multiuser Extended BASIC. Depending on your equipment, it also supports Data General's Business BASIC.

This book assumes only that you have received your computer, disk and/or diskette drive(s), system console, and other peripherals (if any), and plugged them in. With your equipment, you received all the DOS software you need, complete on one or more diskettes. (You also may have received other DOS support software on other diskettes.)

To generate a DOS system, you need:

- a microNOVA or NOVA computer;
- either a diskette unit with at least one drive and a hard-disk subsystem; or
- a diskette unit with two drives;
- a system console -- keyboard/printer or keyboard/display terminal.

Control Characters and BREAK Key

You'll be using several programs to bring up DOS, and you may want to interrupt execution of these programs -- for example, if you make a mistake or change your mind about an answer. If so, type CTRL-A; that is; press the CTRL key, then, while holding CTRL down, press A. This interrupts execution of the command and returns you to the program.

You can suspend display on your terminal by typing CTRL-S and restore it by typing CTRL-Q. This feature can help you read long files on a CRT terminal. We tell you about it here because you may inadvertently type CTRL-S and suspend display. If output suddenly stops, try typing CTRL-Q.

If your computer has a programmed console (described next), the BREAK key on the terminal keyboard stops execution of all software. To continue with the program that was running, type P) (capital P, then carriage RETURN) on the keyboard. We mention this here because, in the course of bringing up and running DOS, you may inadvertently hit the BREAK key. If everything stops, and the system console shows "!", try typing P).

Identifying Your Computer and Disk Drives

Before a DOS system or any other program can run, you must instruct the computer to read it into memory from disk. This is called program load. The program load steps (detailed later in this manual) vary with hardware. Thus the first step is to identify your hardware, as described in this section. (If you already know your hardware setup, skip to the next section.)

The primary categories of hardware are computer type (microNOVA or NOVA) and disk configuration (hard disk with diskette or diskette only).

Licensed Material-Property of Data General Corporation

microNOVA and NOVA Computers

Either a microNOVA or NOVA computer can run DOS. When you are using DOS, the different computers appear to work in much the same way; but the procedure for program loading them may differ.

microNOVA Computers

There are two general categories of microNOVA computer. They are:

- Machines with programmed consoles. Newer microNOVAs, which resemble the top computer shown in Figure 1-1, have special console memory that is microcoded with a loader program to load other programs. If you have one of these, you'll program load by typing characters on the *system* console (CRT or printing terminal).

- Other microNOVAs, that resemble the center computer shown in Figure 1-1. On these machines, there are three program load options. They are:

  - Hand-held console. This has a six-number digital read-out and looks like a small calculator. It clips onto the computer's front panel but you can detach it and move it a few feet from the computer. If you have this option, you'll program load by pressing keys on the hand-held console.

  - Console debug interface. Computers with this option resemble the center computer shown in Figure 1-1, *without* the hand-held console. Like *programmed console* machines, above, console debug computers have a loader program microcoded into special console memory. You program load a console debug machine in exactly the same way you program load a programmed console machine. Thus, in the program load steps described later in this manual, we place programmed console and console debug in the same step, although the computers appear different.

  - CPU program load option. If your computer looks like the one in the center of Figure 1-1 *without* the hand-held console, and it does not have the console debug option, then it has the CPU program load option. This option also provides a microcoded loader program, but the program memory is on the CPU board. With this option, you'll program load by pressing the computer's front panel rocker switch.

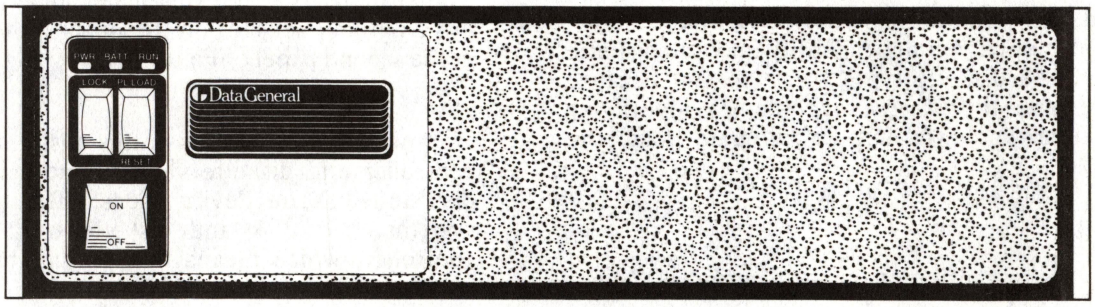
NOVA Computers

Broadly speaking, there are two types of NOVA computer. They are:

- Programmed console machines of the NOVA 4 family. On these, the computer console has its own memory, microcoded with a loader program that loads other programs. If you have one, you'll program load by typing characters on the *system* console (CRT or printing terminal). The top panel in Figure 1-1 belongs to a computer with a programmed console.

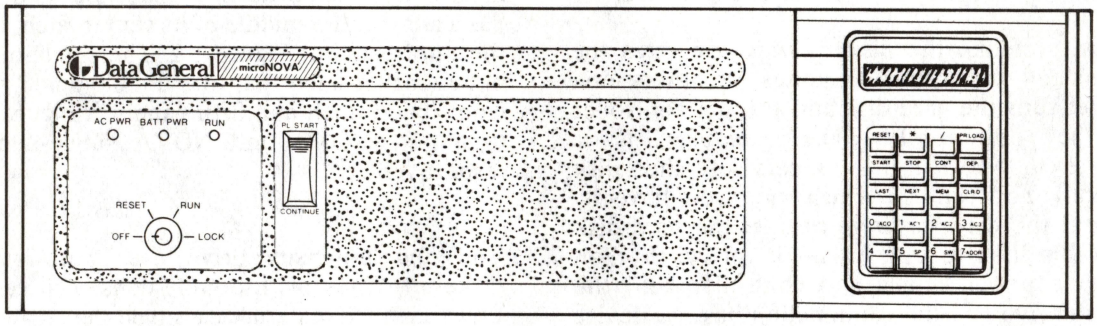
- Computers with hardware data switches. If your NOVA computer is not a NOVA 4, it has hardware data switches, numbered 0 through 15, on its front panel, as shown in the bottom of Figure 1-1. You'll use these data switches, and some others, to load programs.

Licensed Material-Property of Data General Corporation



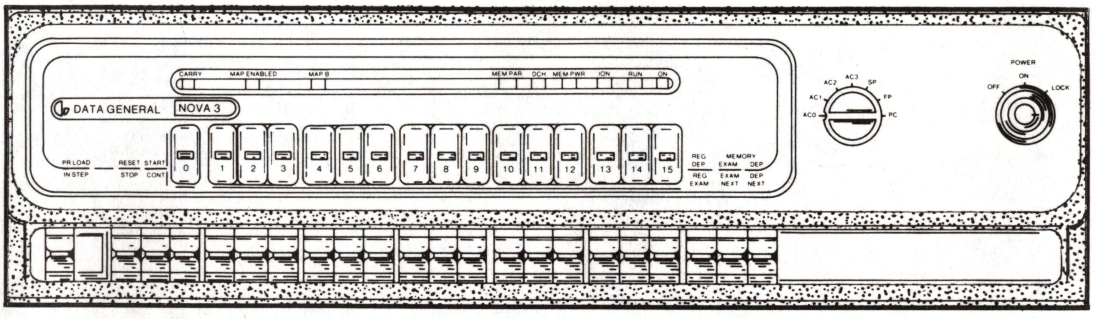
SD-01552

microNOVA or NOVA 4 Computer with Programmed Console



SD-01553

microNOVA MN 600-Series Computer with Hand-Held Console



SD-00530

NOVA 3 Computer with Hardware Data Switches

Figure 1-1. microNOVA and NOVA Computer Front Panels

Licensed Material-Property of Data General Corporation

Disk and Diskette Drives

DOS supports several types of *hard* disks and diskettes; the two main categories are hard disk with diskette and diskette only. If your system includes a hard disk, you need to identify *both* the hard disk and diskette type; with diskettes only, you need identify only the diskette type. Your disk/diskette types are important because they determine the *device code* (device identifying number) that you will use to program load the computer.

Hard Disks

DOS supports two different types of hard disk. These are:

- a sealed moving-head disk drive. This encloses a nonremovable disk and has a control cluster on the upper left of the drive, as shown at the top of Figure 1-2. It may or may not be packaged with one or two diskette drives, as shown at the top of Figure 1-2.

  On most systems, the disk *controller* operates the hard disk and one or more diskettes. On others, one controller runs the hard disk and another controller runs the diskette(s). (The *controller* is a printed-circuit board that supervises the disk hardware.) You can tell which kind you have by looking at the diskette drive nearest the hard-disk drive: if this diskette drive has no power switch, then it shares a power supply and controller with the hard-disk drive and the combination has *one* device code. If the diskette drive *does* have a power switch, then the disk and diskette have separate controllers and different device codes.

- a dual-platter hard-disk subsystem. This is a single moving-head disk drive with two disk platters. The top platter is a removable cartridge, the bottom platter is enclosed and not removable. The disk drive front panel has a control cluster and thumbwheel drive number selector on the upper right, as shown in the second panel of Figure 1-2.

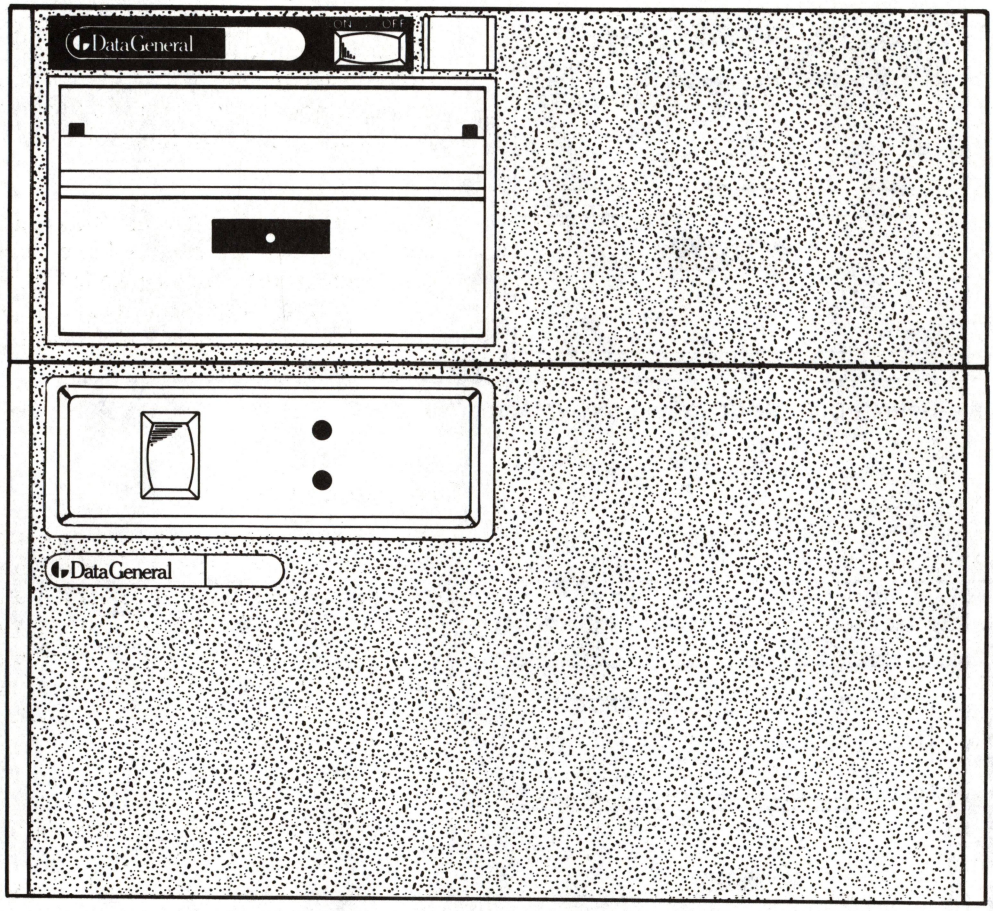
  On microNOVA systems, this disk has its own controller and diskette(s) have another, thus the disk and diskette device codes differ. On NOVA systems, this disk and diskette usually share a controller, which means that the combination has one device code.

Diskette Drives

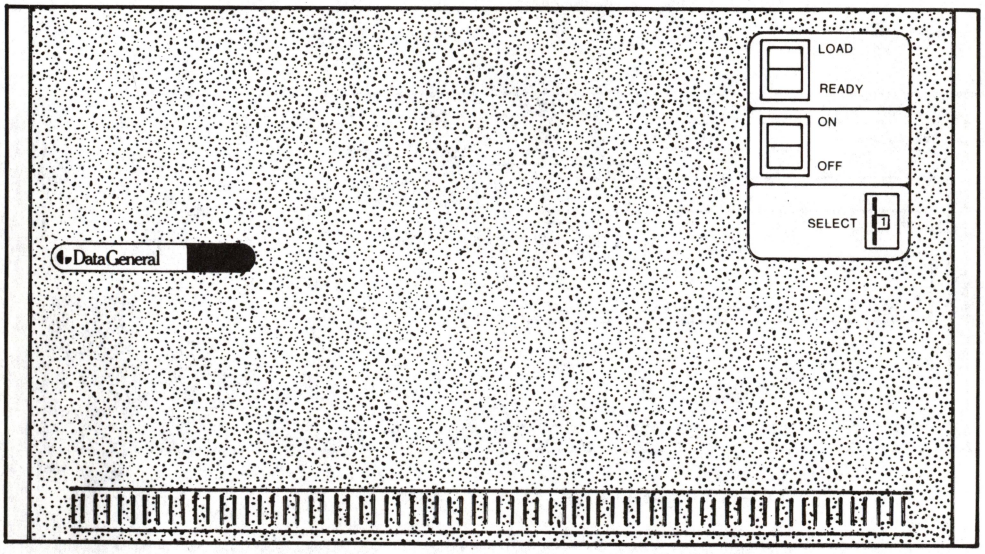
There are two primary types of diskette drive: double density and single density. The double-density drive has a lamp in the middle of its center latch, as shown in the third panel of Figure 1-2. The single-density drive has a smaller latch than the double-density, without a lamp. The fourth and fifth panels in Figure 1-2 belong to a microNOVA and NOVA single-density drive, respectively.

The double-density drive uses both sides of the diskette -- thus, with double density, it can hold four times as much material as a single-density diskette. The DOS system software you received with your hardware fits on one double-density diskette or on two single-density diskettes.

Licensed Material-Property of Data General Corporation



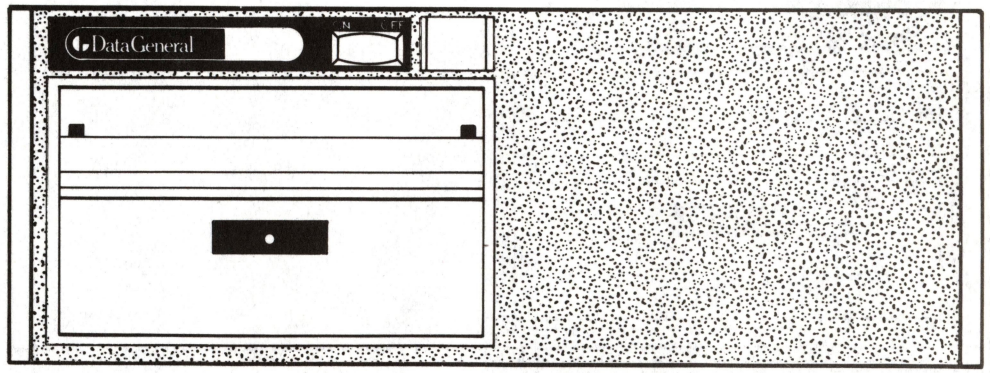
Sealed Moving-Head Disk Drive with Double-Density Diskette Drive
(microNOVA Model 6102, NOVA Model Number 6099)



Dual-Platter Hard-Disk Subsystem (microNOVA Model 6095, NOVA Model 6045)

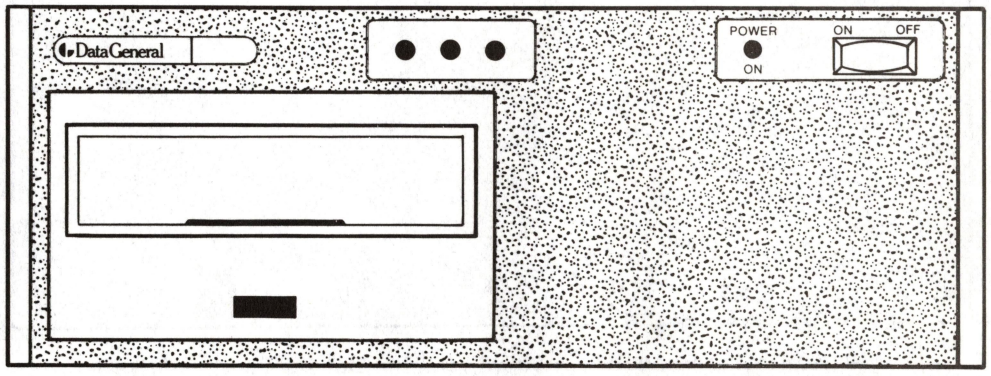
Figure 1-2. Disk and Diskette Drives

Licensed Material-Property of Data General Corporation



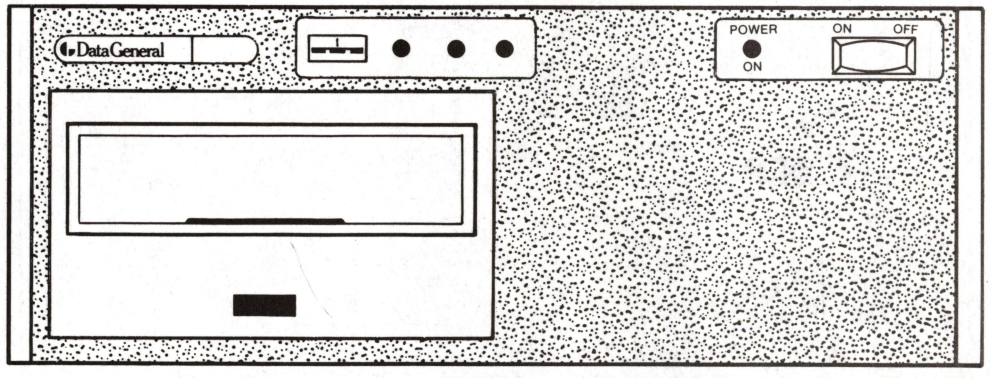
SD-01549

Double-Density Diskette Drive (microNOVA Model Number 6096, NOVA Model Number 6097)



SD-01550

microNOVA Single-Density Diskette Drive (model 6038 or 6039)



SD-01551

NOVA Single-Density Diskette Drive (Model 6030)

Figure 1-2. Disk and Diskette Drives (continued)

Licensed Material-Property of Data General Corporation

Now, examine your computer, diskette drives, and disks (if any). Find the configuration you have in Table 1-1, below, and check the appropriate box in this table. This will help you find and use the appropriate "Preparing for System Generation" chapter.

Table 1-1. Computer/Disk Configurations

Computer Type		
Disk and/or Diskette Type	**microNOVA (Any)**	**NOVA (Any)**
Sealed moving-head disk with double-density diskette, one controller.	Disk model 6101/6102 Device code 100026 Diskette name DE0/DE1 Disk name DE1/DE0 Pre-SYSGEN in Chapter 2	Disk model 6098/6099 Device code 100033 Diskette name DP0/DP1 Disk name DP1/DP0 Pre-SYSGEN in Chapter 3
Dual-platter moving-head with single-density diskette, two controllers.	Disk model 6095 Diskette dev code 33 Diskette name DP0/DP1 Disk dev code 100027 Disk name DH0/DH0F Pre-SYSGEN in Chapter 2	SPECIAL CONFIGURATION
Dual-platter moving-head disk with single-density diskette, one controller.	NOT AVAILABLE	Disk model 6045 Device code 100033 Diskette name DP0/DP1 Disk name DP1/DP0 Pre-SYSGEN in Chapter 3
Dual-drive double-density diskette.	Disk model 6096 Device code 100026 Disketter names DE0/DE1 Pre-SYSGEN in Chapter 4	Disk model 6097 Device code 100033 Diskette names DP0/DP1 Pre-SYSGEN in Chapter 5
Dual-drive single-density diskette.	Disk Model 6038/6039 Device code 33 Diskette names DP0/DP1 Pre-SYSGEN in Chapter 4	Disk model 6030 Device code 100033 Diskette names DP0/DP1 Pre-SYSGEN in Chapter 5

Licensed Material-Property of Data General Corporation

Inserting and Removing a Diskette

To prepare for system generation, and, on a diskette-only system, to bring up DOS, you'll need to insert a diskette into its drive. This section tells you how to do this. At this point, simply scan the steps involved; do not execute them.

- Turn diskette power ON via the disk or diskette power switch.
- Remove a diskette from its paper storage envelope. If this is a Data General-supplied DOS system diskette, it already has a label and you won't be writing data to it. If you *do* want to write to the diskette (for example, to copy to it or to bring up a tailored DOS system on it), cover the *write-protect* hole at the edge of the envelope with a piece of opaque tape. Data General supplies such tape with its blank diskettes. Wrap the tape over the edge to cover both sides of the hole.
- If there is no label on the inner envelope, affix one. Lay the diskette down with the write-protect hole facing away from you and apply the label as shown in Figure 1-3.

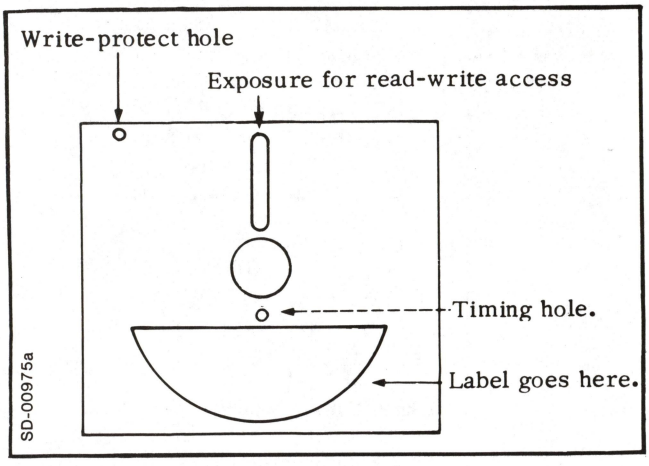


Figure 1-3. Affixing a Label to a Diskette

Don't cover the timing hole or read-write access exposure with the label. If you know what you'll be writing on the diskette, write this on the label *with a felt-tipped pen.* Never use anything else to write on a diskette. If you don't know exactly what you'll be storing on this diskette, leave the label blank and fill it in later.

- Open the drive door. On a double-density drive, press the latch button with lamp in center and the door will swing up; on a single-density drive, depress the latch below the door.
- Slide the diskette into the drive with the label on the envelope facing up, as shown in Figure 1-4. The diskette should slide in smoothly and come to a positive stop in the drive.
- Close the drive door so that it latches shut.

The diskette drive is now ready to execute commands.

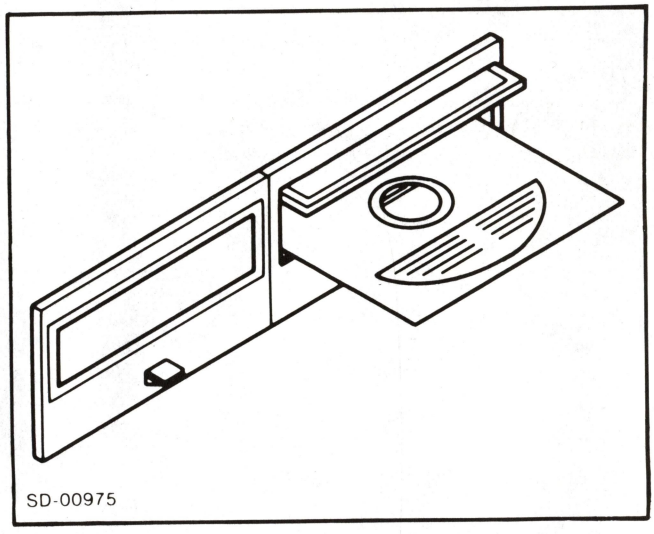


Figure 1-4. Inserting a Diskette

Licensed Material-Property of Data General Corporation

Inserting a Removable Disk Cartridge

If you have a dual-platter hard-disk subsystem, you must insert the removable cartridge before you can use the drive. The specific procedure is covered in the illustrated *Disk Operator's Manual* (014-series) that you received with the disk drive. If the cartridge has already been inserted in the drive, proceed to the next section.

The general procedure for inserting the cartridge involves flipping the drive POWER switch to ON, pulling down the clips at the side of the drive, sliding the drive out of the cabinet, removing the dust cover from a cartridge, settling the cartridge in the drive, locking the cartridge, placing the inverted dust cover on top of the cartridge, and sliding the drive back into the cabinet.

Let's Get Started

Now, having identified the hardware, outlined the procedure for inserting a diskette, and inserted the removable disk cartridge (if applicable), let's proceed.

1. Check that all equipment is plugged in.

2. Turn your system console (CRT or printing terminal) ON and make sure its LINE/LOCAL switch is on the LINE position. On some DASHER™ consoles, the LINE/LOCAL switch is behind the console. You should always have the system console (and, later on, any other terminals the system will be using) on LINE before starting up software.

   If your console is a DASHER printing terminal, press the VIEW MODE switch so that you can easily verify what you've typed.

   If this is an upper/lowercase console, set it in ALPHA LOCK, because some of the programs you'll be using don't accept lowercase letters.

3. Press or turn the computer power switch to ON, or, on a microNOVA without programmed hardware, to RUN.

4. Turn on power to your disk drives (if any) and diskettes. On some hard-disk systems, a single switch powers up both disk and diskette. If you have a dual-platter hard disk, press its LOAD/READY switch to READY. For any hard disk, wait for the READY lamp to light.

5. Proceed according to your hardware:

   - For a microNOVA computer with a hard disk, go to Chapter 2.
   - For a NOVA computer with a hard disk, go to Chapter 3.
   - For diskette-based microNOVA hardware, go to Chapter 4.
   - For diskette-based NOVA hardware, go to Chapter 5.

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 2
Preparing to Generate a DOS System with microNOVA and Hard-Disk Hardware

This chapter explains the steps you must execute before generating your first DOS system on a microNOVA with a hard disk.

We assume that you have the following hardware:

- microNOVA computer;
- diskette enclosure with at least one slot (drive);
- a hard-disk drive; and
- a system console -- keyboard/printer or keyboard/display terminal.

Before generating your first DOS system, you'll prepare your hard disk(s) using the DOS initializer program, DOSINIT.SV. Running DOSINIT is required procedure for *any* blank disk or diskette you plan to use in your system. Next, you'll install a *bootstrap root* on the disk(s). Then you'll install the DOS starter system, which allows you to move to all programs to the hard disk and generate your tailored DOS system.

In describing the procedures in this chapter, we assume that your diskette and disk drive(s) are connected to the appropriate controller, as mentioned in Chapter 1 and shown later in this chapter. (You can, of course, have other diskettes and disk drives on your system, but the devices you use for your first system generation must be connected to the controller whose device code is shown.)

Multiple Diskette Drives

If you have multiple diskette drives, you must identify drive 0 in order to program load. If you have a single diskette drive, it *is* drive 0; skip to the next drive section. For multiple drives, temporarily label the drives according to your hardware. For double-density drives, label the left drive DE0 and the right drive DE2. For single-density drives, label the left drive DP0 and the right drive DP2. If this is wrong, you'll discover it later, and we'll tell you to swap the labels. If you have more than two drives, identify the primary enclosure and label its drives as above. Label the others after system generation. *

The System Diskette(s)

Data General supplies DOS software on diskette medium: one diskette for double-density drives, two diskettes for single-density drives. You may also have received additional Data General software on other diskettes. To prepare for system generation with a double-density diskette, you'll be using the lone microNOVA DOS diskette; with a single-density diskette, you'll use the microNOVA STARTER diskette and the UTILITIES diskette.

Table 2-1 shows the filenames of the programs that you'll use to generate your first system. At this point, you need not know about the other utility programs supplied with DOS; later, you can read about these in Chapter 9.

For any system, check the Release Notice provided with the system for the diskette number(s) and verify that the diskette label number(s) matches these numbers.

Licensed Material-Property of Data General Corporation

Table 2-1. Programs Used in System Generation

Program Filename	Program Purpose
DOSINIT.SV	A disk initializer that you must run on a disk or diskette before you can use it.
BOOT.SV	BOOT can either install a loader root program on disk or diskette or start up DOS from a disk or diskette.
MBOOTSYS.SV, MBOOTSYS.OL	Starter system save and overlay files on microNOVA diskette.
BOOTSYS.SV, BOOTSYS.OL	Starter system save and overlay files on NOVA diskette.
CLI.SV, CLI.OL, CLI.ER	The Command Line Interpreter (CLI) save, overlay, and error files. The CLI allows you to communicate with DOS from the system console.
MDOSA.LB, MDOSC.LB, MDOSI.LB, MDOSO.LB	SYSGEN libraries on microNOVA diskette.
DOSA.LB, DOSB.LB, DOSC.LB, DOSI.LB, DOSO.LB	SYSGEN libraries on NOVA diskette. SYSGEN uses the SYSGEN libraries to build a tailored DOS system.
RLDR.SV, RLDR.OL	The relocatable loader files. SYSGEN uses the loader to build your DOS system from the library files.
SYSGEN.SV	This program asks you questions and uses your answers to build a tailored DOS system.
ALMSPD.SR	Source (parameter) file for Asynchronous Line Multiplexor (ALM) line configuration.
ALMSPD.RB	Assembled binary file for ALM. More about these ALM files later.

Running DOSINIT

Now, assuming you've executed the preliminary steps shown at the end of Chapter 1 (system console on LINE, ALPHA LOCK if applicable, power on to other devices), you're ready to proceed.

1. If your primary diskette drive does not have an ON/OFF switch, then you have a model 6102 disk/diskette sealed disk subsystem; the diskette and disk are on one controller. Execute the rest of this step. If the diskette has its own ON/OFF switch, the diskette and disk are on separate controllers; skip to step 2.

   With a model 6102 sealed disk, you must make the diskette drive 0 to program load. Pull down the clips on the side of the *disk* drive front panel and remove the front panel. At the bottom of the disk drive, you'll see a two-inch cutout in the sheet metal, with arrows and type next to it. Examine this cutout and you'll see *two* small toggle switches. Ignore the left switch (WRITE PROTECT), and move the right switch (DRIVE 0 SELECT) to the left; i.e., to the position marked DSK1/FPY0. This makes the diskette drive 0 (name DE0) and disk drive 1 (name DE1). The diskette will remain DE0 and the disk DE1 until the end of this chapter.

   Leave the disk panel off temporarily and proceed.

2. Get the Data General microNOVA DOS diskette (microNOVA STARTER diskette for a single-density system). Do *not* cover the write-protect hole on this diskette. Open the door to the diskette drive 0 by pressing the latch button (double-density drives) or depressing the latch tab (single-density drives). Slide the diskette, label up and toward you, firmly into its slot. When it stops sliding, release it and close the diskette door. (Details on inserting a diskette appear in Chapter 1.)

Licensed Material-Property of Data General Corporation

Table 2-2. microNOVA Diskette Device Codes and Names

Disk Type	n=	Primary Diskette Name	Secondary Diskette Name (If Any)
Sealed disk and diskette, 1 controller	100026	DE0	DE2
Dual-platter disk subsystem and diskette, 2 controllers	33	DP0	DP1
Sealed disk and diskette, 2 controllers	100066	DE4	DE5

3. Execute the program load steps on your microNOVA computer:

   a. If your microNOVA has a programmed console, the *system* console should show an exclamation point (!) prompt. If it has the console debug option, the system console will show nothing. With either a programmed console or console debug option, find n in Table 2-2, then type:

      nL (e.g., 100026L or 33L)

      on the system console and go to step 4.

   b. If your microNOVA has the hand-held console option, press the RESET key, then the CLR D key. Enter n from Table 2-2 (e.g., 100026 or 33) in the display. Press the PR LOAD key firmly and go to step 4.

   c. If you lack the programmed console, console debug, and hand-held console, press the computer panel rocker switch to the PL/START position. Go to step 4.

4. The computer now reads program BOOT.SV from the DG-supplied diskette. BOOT.SV types out on the system console:

   FILENAME?

(If nothing happens, open and close the diskette door and try step 3 again. If this doesn't work, and you have a dual-drive diskette, swap the diskettes in the drives and try step 3 again. If this works, the right-hand drive is drive 0; swap the labels and proceed. If swapping doesn't apply or doesn't work, tape the write-protect hole on the DG-supplied diskette, reinsert it, and try step 3 again. If this works, proceed, but follow instructions very carefully. If taping doesn't work, you'll need to go to the *microNOVA Technical Reference Manual* to check the device code jumpers.)

Answer the question with DOSINIT's filename:

DOSINIT)

5. BOOT.SV now reads DOSINIT.SV into memory. DOSINIT announces itself and asks for the model number of your drive:

   DOSINIT REV x.xx (*x.xx* is the revision number.)
   DISK DRIVE MODEL NUMBER?

6. At this point, if you have two diskette drives, you should make a copy of the DG-supplied starter diskette for safety. The remainder of step 6 tells you how to do this. If you have only one diskette drive, proceed to step 7, but *follow instructions very carefully through step 21.*

   a. To copy the DG-supplied diskette, get a blank Data General diskette, tape the write-protect hole and attach a label as described in Chapter 1; then write MY STARTER DISKETTE on the label *with a felt-tipped pen* (never use anything else on a diskette). Insert this diskette in the vacant slot in the enclosure which holds the original DG diskette and close the door.

Licensed Material-Property of Data General Corporation

b. Answer DOSINIT's question about DISK DRIVE MODEL NUMBER with the Data General model number of your diskette. For double density, this is 6096; for single density, it is 6038. Type:

6096) (for double density)

or

6038) (for single density)

Next, DOSINIT asks:

DISK UNIT?

c. Type in the unit name of the blank diskette, from the third column of Table 2-2; e.g., DE2).

COMMAND?

d. DOSINIT has accepted the diskette information and now wants a command. Type:

FULL)

FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE
DOS INIT/F MUST BE ISSUED AFTER FULL INIT.
DO YOU REALLY WANT A FULL INIT? (YES OR NO)

e. Tell DOSINIT to go ahead by typing:

YES)

f. Now, for a double-density diskette, DOSINIT asks about the number of patterns to run. For single density, it runs five patterns without asking. If it asks about patterns, type 5):

NUMBER OF PATTERNS TO RUN (1-5)? 5)

DOSINIT now runs patterns on the blank diskette to check its surface for flaws. Each pattern takes several minutes to run. The following messages will appear if the diskette is OK. (If you see an abort message, consult Chapter 10, "Full Command" for recovery procedures.)

****PATTERN # 1 (125252) ****
****PATTERN # 2 (052525) ****
****PATTERN # 3 (155555) ****
****PATTERN # 4 (000000) ****
****PATTERN # 5 (177777) ****

****ALL PATTERNS RUN ****

g. For a double-density diskette, DOSINIT now asks three more questions: *REMAP AREA SIZE, REMAP AREA START,* and *FRAME SIZE.* Press) for each of these to select the default answer. For single density, these questions don't apply.
Next, DOSINIT says:

FULL INIT COMPLETE

COMMAND?

h. Type: COPY)

COPY DISK(ETTE) IS ON xxn (*n* is number given in 6c)
NOW TELL ME ABOUT THE ORIGINAL DISK(ETTE).
DISK DRIVE MODEL NUMBER?

i. Type the model number you gave in step 6b (e.g., 6096))

DISK UNIT?

j. Respond with the DG diskette name from the second column of Table 2-2; e.g., DE0).

I AM ABOUT TO COPY xxo TO xxn.
IS THIS CORRECT? (*o* is number in 6j.)
ANSWER (YES) TO CONTINUE,
(N0) TO STOP

k. Type: YES)

DOSINIT now copies the DG original to the blank diskette, which takes a few moments. Then it says:

I HAVE FINISHED MAKING YOUR COPY
ANOTHER COPY?

Licensed Material-Property of Data General Corporation

l. Type: NO).

COMMAND?

m. Remove the DG original diskette from drive 0, replace it in its envelope, and store it safely. Take the copy from the other drive, insert it in drive 0, and close the door to drive 0.

n. Type:

DISK)
DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER?
Go to step 7.

7. DOSINIT is asking for your DISK DRIVE MODEL NUMBER? Type the model number of your hard disk, as shown in Table 2-3; e.g., 6102).

Table 2-3. microNOVA Hard-Disk Model Numbers and Unit Names

Description	For Model Number, Type:	For Unit Name, Type:
Sealed disk and diskette, 1 controller	6102)	DE1)
Dual-platter disk subsystem and diskette, 2 controllers	6095)	DH0) (later, DH0F))
Sealed disk and diskette, 2 controllers	6102)	DE0)

If you give an invalid response to any DOSINIT question, DOSINIT will type out an appropriate error message and repeat the question. If you get a DEVICE TIMEOUT message, the device you specified either does not exist or is not on line; correct your entry. If you make a typing mistake, press the DEL or RUBOUT key to remove bad characters one by one. DOSINIT echoes an underscore (_) or backarrow (<) for each character erased. If DOSINIT stops responding altogether after an entry, go back to step 3.

DISK UNIT?

8. DOSINIT wants to know the unit name of a disk. Respond with the name of your hard disk, from the third column of Table 2-3, e.g., DE1) or DH0).

COMMAND?

9. DOSINIT is ready for a command, so type:

FULL)

With this, you request a full initialization of your hard disk. DOSINIT asks for verification, then checks the disk for *bad blocks* (portions that will not retain information). It does this by writing patterns to the disk and reading them back. On sealed disks (DE1) each pattern takes about 25 minutes to run; on cartridge disks (DH0), it takes about 10 minutes; on fixed disks, less than 10 minutes. You may want to leave the computer and do something else while the patterns run; but wait until the first pattern runs without errors to do so.

Follow the steps shown in Figure 2-1. If the dialog varies from that shown in the figure, consult Chapter 10, the "FULL Command," for recovery procedures.

Licensed Material-Property of Data General Corporation

9. *COMMAND?* FULL)

FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE.
DOS INIT/F MUST BE ISSUED AFTER FULL INIT.
DO YOU REALLY WANT A FULL INIT? (YES OR NO)

a. Type: YES)

NUMBER OF PATTERNS TO RUN (1-5)?

b. We recommend running all five patterns on your disk to check for bad blocks although this may take a while. DOSINIT will report any bad blocks and place them in a bad block table on the disk, so that DOS will pass over them later. (DOS allows bad blocks on disks and double-density diskettes, but not on single-density diskettes.) Type:

5)

****PATTERN # 1 (125252)****
****PATTERN # 2 (052525)****
****PATTERN # 3 (155555)****
****PATTERN # 4 (000000)****
****PATTERN # 5 (177777)****

****ALL PATTERNS RUN****

DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT
ARE NOT ALREADY IN THE BAD BLOCK TABLE?

c. Type: NO)

DEFAULT REMAP AREA SIZE IS 12 BLOCKS LONG
IT NEEDS TO BE AT LEAST n BLOCKS LONG

(*n* is the number of bad blocks DOSINIT found on the disk)

REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?

d. Type:)

REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?

Figure 2-1. Running DOSINIT.SV on a Hard Disk microNOVA System

Licensed Material-Property of Data General Corporation

e. Type:)

DEFAULT FRAME SIZE IS xx
MIN IS 1 AND MAX IS YY
DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?

f. Frame size is discussed in Chapter 10. For now, type:

)

FULL INIT COMPLETE

COMMAND?

g. If you have a sealed single-platter disk, you're done; type STOP) and skip the rest of step 10. If you have a dual-platter disk, you need to initialize the fixed disk. Type:

DISK)

DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER?

h. Type:

6095)

DISK UNIT?

i. Type:

DH0F)

COMMAND?

j. Execute steps 9 through 9f to initialize the fixed disk, then type:

STOP)

Figure 2-1. Running DOSINIT.SV on a Hard Disk microNOVA System (continued)

Licensed Material-Property of Data General Corporation

Installing the Bootstrap Root

Next, install the disk bootstrap root on your disk(s). Later, this will help you to start up a DOS system from this disk.

10. Repeat the appropriate program load steps for your hardware.

    a. If your computer has a programmed console (! prompt) or console debug, type:

       nL (e.g., 100026L or 33L, from Table 2-2)

       on the system console and go to step 11.

    b. If you have the hand-held console option, press the RESET key, then the CLR D key. Enter n from Table 2-2 (e.g., 100026 or 33) in the display. Press the PR LOAD key and go to step 11.

    c. If you lack the features and options above, you have the CPU program load option. Press the computer panel rocker switch to the PL/START position.

11. BOOT.SV comes into memory again; it asks for the filename you want:

    FILENAME?

    Type:

    BOOT)

    This loads the installer portion of BOOT.SV. BOOT announces itself, then asks:

    BOOTSTRAP DEVICE SPECIFIER?

12. Respond with the hard-disk name that you gave DOSINIT (from Table 2-3); e.g., DE0) (sealed disk) or DH0) (dual-platter disk).

    INSTALL BOOTSTRAP (Y OR N) ?

13. Respond with Y:

    Y

    DONE.

    BOOTSTRAP DEVICE SPECIFIER?

    If you have a dual-platter disk, type DH0F), then Y, to install a bootstrap root on the fixed disk.

Installing the DOS Starter System

At this point, you're ready to install the DOS starter system. BOOT is still asking for a BOOTSTRAP DEVICE SPECIFIER.

14. Get BOOT to ask *FILENAME* by typing the primary diskette name from Table 2-2 (e.g., DE0 or DH0), then N. Type:

    DE0) (diskette with sealed disk)

    or

    DH0) (diskette with cartridge disk)

    INSTALL BOOTSTRAP (Y OR N)

15. Type:

    N

    FILENAME?

16. Respond with the starter system name, MBOOTSYS:

    MBOOTSYS)

    (If you get a FILE DOES NOT EXIST message after typing MBOOTSYS), type the diskette name from Table 2-2, a colon, and MBOOTSYS; e.g., DE0:MBOOTSYS))

    BOOT will now bring up the starter system, MBOOTSYS.SV, from diskette. Soon, the starter system will come up and type out:

    DOS REV x.xx
    DATE (M/D/Y) ?

17. Enter the current date, in the format "month date year"; for example:

    1 16 79)

    Next, it asks for the time:

    TIME (H:M:S) ?

Licensed Material-Property of Data General Corporation

18. Enter the time, in the format "hours-in-24 minutes seconds". The second entry is optional; for example:

    15 05)

    Now the starter system invokes the Command Line Interpreter, which types its prompt:

    R

    The DOS Starter System is running from diskette.

19. Make the hard disk(s) available to DOS by typing INIT/F to it:

    a. INIT/F DE0) (for a model 6102 sealed disk)

    or

    INIT/F DH0) (for a dual-platter model 6095 disk)
    R

    b. With a dual-platter 6095 disk, also type INIT/F DH0F).

    The INIT command with the/F switch writes a new file and map directory to disk or diskette. You *must* type INIT/F to any blank disk or diskette you plan to use on the system. INIT/F destroys all files on the destination disk or diskette, but there are no files on your hard disk(s) at this point.

20. Now, copy all files from diskette to the hard disk. This process will take some time because file transfers from diskette take time to execute -- don't be alarmed at the delay, and wait for the R prompt. According to your hardware, type:

    MOVE/V DE1) (6102 sealed disk)

    or

    MOVE/V DH0) (cartridge disk on 6095 subsystem)

    (The CLI verifies filenames copied to the hard disk.)

    R

    This step gives the hard disk all files it needs to start up and run DOS, including BOOT.SV and the Command Line Interpreter.

21. Bring up the starter system on the hard disk by typing:

    BOOT DE1:MBOOTSYS) (6102 sealed disk)

    or

    BOOT DH0:MBOOTSYS) (cartridge disk)

    MASTER DEVICE RELEASED

    DOS REV x.xx
    DATE (M/D/Y)?

22. Type in the date again; for example:

    1 16 79)

    TIME (H:M:S) ?

23. Type in the time; for example:

    15 10)

    The starter system invokes the CLI, which issues the prompt:

    R

    (If the starter system doesn't come up, execute steps 10-23 again.)

    The diskette has been released and the starter system is now running from the hard disk. The starter system is stored under the filename MBOOT.SV; its overlays are in file MBOOTSYS.OL. If need be, you can execute the program load steps and bring it up by typing MBOOTSYS) when BOOT asks *FILENAME?*.

The Next Steps

If you have a double-density diskette, go to step 26.

For a single-density diskette, you need to copy the DOS utility files from the UTILITIES diskette to your hard disk. To do this:

24. Remove MY STARTER DISKETTE or the DG STARTER diskette from DP0 and store it safely. Insert the DG-supplied UTILITIES diskette in drive DP0. Don't cover the write-protect hole.

Licensed Material-Property of Data General Corporation

25. Initialize the UTILITIES diskette and copy the files over by typing:

```
INIT DP0)
WARNING: DISK WRITE PROTECTED
R
LOAD/V DP0:UTILITIES)
.
(The CLI verifies files copied.)
.
R
```

26. You have now finished loading the DOS software files and are nearly done with the pre-SYSGEN procedure. Release the hard disk by typing:

```
RELEASE %MDIR%)
```

DOS will then sign off and type:

```
MASTER DEVICE RELEASED
```

27. For a model 6102 sealed disk, you must restore the disk to drive number 0 and the diskette to drive number 1 (for a 6095 dual-platter disk, skip the remainder of this step). Turn to the disk front panel and move the right-hand toggle switch, marked DRIVE 0 SELECT, to the right, i.e., to the DSK0/FPY1 position. Replace the front panel cover on the disk drive.

Your starter system, SYSGEN libraries, and other DOS software are complete on the hard disk. Remove the diskette from its drive, replace it in its outer envelope, and store all diskettes safely.

If your disk is a sealed model 6102 disk, the disk name is now DE0 and the diskette name DE1. (The disk name is DE0 and the diskette name is DE4 for a diskette on the second controller.)

If your disk is a dual-platter disk subsystem, you can turn the diskette drive OFF. The cartridge disk name is DH0, the fixed-disk name is DH0F, and the diskette name is DP0.

You're done with the preparation and ready to generate a tailored DOS system. To do so, go to Chapter 6. This procedure will be *much* easier than what you've done already.

Figure 2-2 summarizes the steps you take to run DOSINIT, install the bootstrap root, and install the starter system. When you have a DOS system running, you need not execute all these steps to ready a new disk or diskette for use; instead use the CLI command BOOT DOSINIT) to run DOSINIT or BOOT BOOT) to install a bootstrap root.

Execute preliminary steps (power up devices) in Chapter 1.

1. With a sealed disk and diskette on one controller, remove disk front panel and throw DRIVE 0 SELECT toggle switch to DSK1/FPY0 position.

2. Open diskette door and insert DG-supplied microNOVA DOS diskette (microNOVA DOS STARTER diskette for single-density systems).

3. Program load your computer:

   a. With programmed console (! prompt) or console debug, type nL from Table 2-2 (e.g., 100026L or 33L) on system console.
   b. With a hand-held console, press RESET, CLR D, enter n (e.g., 100026 or 33) from Table 2-2 in display, press PR LOAD.
   c. With CPU program load, press rocker switch to PL/START.

f. *FILENAME?* DOSINIT)

5. *DOSINIT REV x.xx*
   DISK DRIVE MODEL NUMBER?

6. If you have two diskette drives, copy DG original diskette as described in full step 6, earlier. With only one drive, proceed but follow the instructions very carefully.

Figure 2-2. Installing the microNOVA Starter System on a Hard Disk

Licensed Material-Property of Data General Corporation

7. *DISK DRIVE MODEL NUMBER?* nnnn) (e.g., 6102) for sealed disks or see Table 2-3)
8. *DISK UNIT?* DE1) (or DH0) for dual-platter disks or see Table 2-3)

9. *COMMAND?* FULL)

   FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE.
   .....

   a. *DO YOU REALLY WANT A FULL INIT (YES OR NO) ?* YES)

   b. *NUMBER OF PATTERNS TO RUN (1-5)?* 5)

      **** PATTERN NUMBER 1 (125252) ****
      **** PATTERN NUMBER 2 (052525) ****

      **** ALL PATTERNS RUN ****

   c. *DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE?* NO)

   d. *DEFAULT REMAP AREA IS 12 BLOCKS LONG*
      IT NEEDS TO BE AT LEAST yy BLOCKS LONG
      REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?)

   e. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?*)

   f. *DEFAULT FRAME IS nn*
      MIN IS 1 and MAX IS mm
      DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

      FULL INIT COMPLETE

      COMMAND?

   g. For sealed single-platter disks, type STOP) and skip to next step. For dual-platter disks, type:

      DISK)

   h. *DOSINIT REV x.xx*
      DISK DRIVE MODEL NUMBER? 6095)

   i. *DISK UNIT?* DH0F)

   j. Execute steps 9 through 9f; then type STOP).

10. Program load via step 3.

11. *FILENAME?* BOOT)

    BOOT REV x.xx

12. *BOOTSTRAP DEVICE SPECIFIER?* DE1) (or DH0), as in step 8)

Figure 2-2. Installing the microNOVA Starter System on a Hard Disk (continued)

Licensed Material-Property of Data General Corporation

13. *INSTALL BOOTSTRAP (Y OR N)?* Y

    DONE.

    BOOTSTRAP DEVICE SPECIFIER?

    For dual-platter disks, type DH0F) and Y to install root on fixed disk.

    BOOTSTRAP DEVICE SPECIFIER?

14. Type diskette name:

    DE0) (sealed disk systems)
    DP0) (dual-platter systems)

15. *INSTALL BOOTSTRAP (Y OR N)?* N

16. *FILENAME?* MBOOTSYS)
    DOS REV x.xx

17. *DATE (M/D/Y)?* 1 16 79) (enter date)

18. *TIME (H:M:S)?* 15 05) (enter time)

    R

19. Fully initialize the hard disk(s):

    a. INIT/F DE1) (sealed disk)
       or
       INIT/F DH0) (cartridge disk)
       R

    b. INIT/F DH0F) (fixed disk in dual-platter systems)
       R

Figure 2-2. Installing the microNOVA Starter System on a Hard Disk (continued)

Licensed Material-Property of Data General Corporation

20. MOVE/V DE1) (sealed disk)
    or
    MOVE/V DH0) (dual-platter disk)

    .
    (verification of files copied to disk)
    .
    R

21. BOOT DE1:MBOOTSYS) (sealed disk)
    or
    BOOT DH0:MBOOTSYS) (dual-platter disk)
    MASTER DEVICE RELEASED

    DOS REV x.xx

22. *DATE (M/D/Y)?* 1 16 79) (Enter date)

23. *TIME (H:M:S)?* 15 10) (Enter time)

    R

    For double density, skip to step 26.

24. For single density, remove the diskette from drive DP0 and insert the DG-supplied UTILITIES diskette in DP0.

25. INIT DP0)
    WARNING: DISK WRITE PROTECTED
    R
    LOAD/V DP0:UTILITIES)
    .
    (verification of files loaded onto cartridge)
    R

26. RELEASE %MDIR%)

Figure 2-2. Installing the microNOVA Starter System on a Hard Disk (continued)

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 3
Preparing to Generate a DOS System with NOVA and Hard-Disk Hardware

This chapter explains the steps you must execute before generating your first DOS system on a NOVA computer with a hard disk.

We assume that you have the following hardware:

- NOVA computer;
- diskette enclosure with a least one slot (drive);
- a hard disk drive; and
- a system console -- keyboard/printer or keyboard/display terminal.

Before generating your first DOS system, you'll prepare your hard disk(s) using the DOS initializer program, DOSINIT.SV. Running DOSINIT is required procedure for *any* blank disk or diskette you plan to use in your system. Next, you'll install a *bootstrap root* on the disk(s). Then you'll install the DOS starter system, which allows you to move all programs to the hard disk and generate your tailored DOS system.

In describing the procedures in this chapter, we assume that your diskette and disk drive(s) are connected to the primary controller, on device code 33 octal. (You can, of course, have other diskettes and disk drives on your system, but the devices you use for your first system generation must be connected to the primary controller.)

Multiple Diskette Drives

If you have multiple diskette drives, you must identify drive 0 in order to program load. For a single diskette drive, skip to the next section. For multiple diskette drives and a dual-platter hard-disk subsystem, dial 0 on one diskette drive and 2 on the other. For multiple diskette drives and a sealed hard disk, find the diskette enclosure that adjoins the disk drive in the cabinet. If this diskette enclosure has two drives, label the left drive PRIMARY DISKETTE and the right drive DP2. If the diskette enclosure nearest the hard disk has only one drive, label this drive PRIMARY DISKETTE. If this is wrong, you'll discover it later, and can then try another drive. After system generation, label all other drives (if any).

*

The System Diskette(s)

Data General supplies DOS software on diskette medium: one diskette for double-density drives, two diskettes for single-density drives. You may also have received additional Data General software on other diskettes. To prepare for system generation with a double-density diskette, you'll use the lone NOVA DOS diskette; with a single-density diskette, you'll use the NOVA STARTER diskette and the UTILITIES diskette.

Table 3-1 shows the filenames of the programs that you'll use to generate your first system. At this point, you need not know about the other utility programs supplied with DOS; later, you can read about these in Chapter 9.

For any system, check the Release Notice provided with the system for the diskette number(s) and verify that the diskette label number(s) match these numbers.

Licensed Material-Property of Data General Corporation

Table 3-1. Programs Used in System Generation

Program Filename	Program Purpose
DOSINIT.SV	A disk initializer that you must run on a disk or diskette before you can use it.
BOOT.SV	BOOT can either install a loader root program on disk or diskette or start up DOS from a disk or diskette.
MBOOTSYS.SV, MBOOTSYS.OL	Starter system save and overlay files on microNOVA diskette.
BOOTSYS.SV, BOOTSYS.OL	Starter system save and overlay files on NOVA diskette.
CLI.SV, CLI.OL, CLI.ER	The Command Line Interpreter (CLI) save, overlay, and error files. The CLI allows you to communicate with DOS from the system console.
MDOSA.LB, MDOSC.LB, MDOSI.LB, MDOSO.LB	SYSGEN libraries on microNOVA diskette.
DOSA.LB, DOSB.LB, DOSC.LB, DOSI.LB, DOSO.LB	SYSGEN libraries on NOVA diskette. SYSGEN uses the SYSGEN libraries to build a tailored DOS system.
RLDR.SV, RLDR.OL	The relocatable loader files. SYSGEN uses the loader to build your DOS system from the library files.
SYSGEN.SV	This program asks you questions and uses your answers to build a tailored DOS system.
ALMSPD.SR	Source (parameter) file for Asynchronous Line Multiplexor (ALM) line configuration.
ALMSPD.RB	Assembled binary file for ALM. More about these ALM files later.

Licensed Material-Property of Data General Corporation

Running DOSINIT

Now, assuming you've executed the preliminary steps shown at the end of Chapter 1 (system console on LINE, ALPHA LOCK if applicable, power on to other devices), you're ready to proceed.

1. Make the diskette drive 0 so that you can program load from it.

   a. If neither the disk drive or diskette has a thumbwheel drive selector, then you have a model 6099 sealed disk with double-density diskette. Pull down the clips on the side of the *disk* drive front panel and remove the front panel. At the bottom of the disk drive, you'll see a two-inch cut out in the sheet metal, with arrows and type next to it. Examine this cutout and you'll see *two* small toggle switches. Ignore the left switch (WRITE PROTECT), and move the right switch (DRIVE 0 SELECT) to the left, i.e., to the position marked DSK1/FPY0. Thus the diskette drive becomes drive 0 (name DP0) and the disk becomes drive 1 (name DP1). The diskette will remain DP0 and the disk DP1 until the end of this chapter.

      Leave the disk panel off temporarily and proceed to step 2.

   b. If both the disk and diskette drives have thumbwheel drive number selectors, then you have a model 6045 dual-platter disk subsystem and, generally, a single-density diskette. Dial 0 on the diskette drive and dial 1 on the hard disk drive. This makes the diskette drive DP0 and the disk drive DP1. The diskette will remain DP0, and the hard disk DP1 until the end of this chapter.

2. Get the Data General NOVA DOS diskette (NOVA STARTER diskette for a single-density system). Do *not* cover the write-protect hole on this diskette. Open the door to diskette drive 0 by pressing the latch button (double-density drives) or depressing the latch tab (single-density drives). Slide the diskette, label up and toward you, firmly into its slot. When it stops sliding, release it and close the diskette door. (Details on inserting a diskette appear in Chapter 1.)

3. Execute the program load steps on your NOVA computer:

   a. If your computer has a programmed console, the CRT or printing system console should show a number and an exclamation point (!) prompt. (If not, flip the computer power switch OFF and ON.) Type:

      ```
      100033L
      ```

      on the system console and go to step 4.

   b. If your computer has hardware data switches and automatic program load, set the data switches to 100033 octal (switches 0, 11, 12, 14, and 15 up, the others down). Lift the RESET switch, then the PROGRAM LOAD switch, and go to step 4.

   c. If your computer has hardware data switches but lacks auto program load, key a two-word program into the switches. Follow these steps (we list them here, then refer you to this section later).

      - Set the data switches to 376 octal (switches 8 through 14 up, the others down).
      - Lift the EXAMINE switch, hold it up, and verify that the ADDRESS lights match the switch settings.
      - Set the data switches to 060133 octal (switches 1, 2, 9, 11, 12, 14, and 15 up, the others down.)
      - Lift the DEPOSIT switch and hold it up; verify that the lights match the switch settings.
      - Set the data switches to 000377 octal (switches 8 through 15 up, the others down).
      - Depress the DEPOSIT NEXT switch and hold it down; verify that the lights match the switch settings.
      - Set the data switches to 000376 octal again (put down switch 15); lift and release the RESET switch, then the START switch. Go to step 4.

Licensed Material-Property of Data General Corporation

4. The computer now reads program BOOT.SV from the DG-supplied diskette. BOOT.SV types out on the system console:

   FILENAME?

(If nothing happens, open and close the diskette door and try step 3 again. If this doesn't work, and you have a dual-drive diskette enclosure, swap the diskettes in the drives and try step 3 again. If this works, the right-hand drive is drive 0; swap the labels and proceed. If swapping doesn't apply or doesn't work, tape the write-protect hole on the DG-supplied diskette, reinsert it, and try step 3 again. If this works, proceed, but follow instructions very carefully.)

Answer the question with DOSINIT's filename:

DOSINIT⟩

5. BOOT.SV now reads DOSINIT.SV into memory. DOSINIT announces itself and asks for the model number of your drive:

   DOSINIT REV x.xx (*x.xx* is the revision number.)
   DISK DRIVE MODEL NUMBER?

6. At this point, if you have two diskette drives, you should make a copy of the DG-supplied starter diskette for safety. The remainder of step 6 tells you how to do this. If you have only one diskette drive, proceed to step 7, but *follow instructions very carefully through step 21.*

   a. To copy the DG-supplied diskette, get a blank Data General diskette, tape the write-protect hole and attach a label as described in Chapter 1; then write MY STARTER DISKETTE on the label *with a felt-tipped pen* (never use anything else on a diskette). Insert this diskette in the vacant drive in the enclosure that holds the original DG diskette and close the door. On a dual-platter single-density diskette system, this vacant drive should have 2 dialed on its thumbwheel.

   b. Answer DOSINIT's question about DISK DRIVE MODEL NUMBER with the Data General model number of your diskette. For double density, this is 6097; for single density, it is 6030. Type:

      6097⟩ (for double density)

      or

      6030⟩ (for single density)

      Next, DOSINIT asks:

      DISK UNIT?

   c. Respond with the unit name of the blank diskette; this is DP2:

      DP2⟩

      If you get a DEVICE TIMEOUT message, the diskette is not in drive DP2, or DP0 is not ON. Try other vacant drives (*not* PRIMARY) until DOSINIT accepts DP2⟩.

      COMMAND?

   d. DOSINIT has accepted the diskette information and now wants a command. Type:

      FULL⟩

      FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE
      DOS INIT/F MUST BE DONE ISSUED AFTER FULL INIT.
      DO YOU REALLY WANT A FULL INIT? (YES OR NO)

   e. Tell DOSINIT to go ahead by typing:

      YES⟩

   f. Now, for a double-density diskette, DOSINIT asks about the number of patterns to run. For single density, it runs five patterns without asking. If it asks, type 5⟩:

      NUMBER OF PATTERNS TO RUN (1-5)? 5⟩

      DOSINIT now runs patterns on the blank diskette to check its surface for flaws. Each pattern takes several minutes to run. The following messages will appear if the diskette is OK. (If you see an abort message, consult Chapter 10, "FULL Command", for recovery procedures.)

      ****PATTERN # 1 (125252) ****
      ****PATTERN # 2 (052525) ****
      ****PATTERN # 3 (155555) ****
      ****PATTERN # 4 (000000) ****
      ****PATTERN # 5 (177777) ****

      ****ALL PATTERNS RUN ****

   g. For a double-density diskette, DOSINIT now asks three more questions: *REMAP AREA SIZE, REMAP AREA START,* and *FRAME SIZE.* Press ⟩ for each of these to select the default answer. For single density, these questions don't apply. Next, DOSINIT says:

      FULL INIT COMPLETE

      COMMAND?

Licensed Material-Property of Data General Corporation

h. Type: COPY)

COPY DISK(ETTE) IS ON Dxn (*n* is number given in 6c.)
NOW TELL ME ABOUT THE ORIGINAL DISK(ETTE).
DISK DRIVE MODEL NUMBER?

i. Type the model number you gave in step 6b (e.g., 6097))

DISK UNIT?

j. Type: DP0)

I AM ABOUT TO COPY Dx0 TO Dx2. IS THIS CORRECT?
ANSWER (YES) TO CONTINUE, (NO) TO STOP

k. Type: YES)

DOSINIT now copies the DG original to the blank diskette, which takes a few moments. Then it says:

I HAVE FINISHED MAKING YOUR COPY
ANOTHER COPY?

l. Type: NO).

COMMAND?

m. Remove the DG original diskette from drive 0, replace it in its envelope, and store it safely. Take the copy from the other drive, insert it in drive 0, and close the door to drive 0.

n. Type:

DISK)
DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER?

Go to step 7.

7. DOSINIT is asking for your DISK DRIVE MODEL NUMBER? Type the model number of your hard disk, as shown in Table 3-2; e.g., 6099).

If you give an invalid response to any DOSINIT question, DOSINIT will type out an appropriate error message and repeat the question. If you get a DEVICE TIMEOUT message, the device you specified either does not exist or is not on line; correct your entry. If you make a typing mistake, press the DEL or RUBOUT key to remove bad characters one by one. DOSINIT echoes an underscore (_) or backarrow (<) for each character erased. If DOSINIT stops responding altogether after an entry, go back to step 3.

Table 3-2. NOVA Hard Disk Model Numbers and Unit Names

Description	For Model Number, Type:	For Unit Name, Type:
Sealed disk and diskette, 1 controller	6099)	DP1)
Dual-platter disk subsystem and diskette, 1 controller	6045)	DP1) (later, DP1F)

DISK UNIT?

8. DOSINIT wants to know the unit name of a disk. Respond with the name of your hard disk, which is DP1).

COMMAND?

9. DOSINIT is ready for a command, so type

FULL)

With this, you request a full initialization of your hard disk. DOSNINIT asks for verification, then checks the disk for *bad blocks* (portions that will not retain information). It does this by writing patterns to the disk and reading them back. Follow the steps shown in Figure 3-1. On some disks, each pattern takes about ten minutes to run; on others it takes less time.

If the dialog varies from that shown in the figure, consult Chapter 10, the "FULL Command", for recovery procedures.

Licensed Material-Property of Data General Corporation

9. *COMMAND?* FULL)

FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE.
DOS INIT/F MUST BE ISSUED AFTER FULL INIT.
DO YOU REALLY WANT A FULL INIT? (YES OR NO)

a. Type: YES)

NUMBER OF PATTERNS TO RUN (1-5)?

b. We recommend running all five patterns on your disk to check for bad blocks although this may take a while. DOSINIT will report any bad blocks and place them in a bad block table on the disk, so that DOS will pass over them later. (DOS allows bad blocks on disks and double-density diskettes, but not on single-density diskettes.) Type:

5)

****PATTERN # 1 (125252)****
****PATTERN # 2 (052525)****
****PATTERN # 3 (155555)****
****PATTERN # 4 (000000)****
****PATTERN # 5 (177777)****

****ALL PATTERNS RUN****

DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT
ARE NOT ALREADY IN THE BAD BLOCK TABLE?

c. Type: NO)

D FAULT REMAP AREA SIZE IS 12 BLOCKS LONG
IT NEEDS TO BE AT LEAST n BLOCKS LONG (*n* is the number of bad blocks DOSINIT found on the disk)

REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?

d. Type:)

REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?

e. Type:)

DEFAULT FRAME SIZE IS xx
MIN IS 1 AND MAX IS yy
DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?

f. Frame size is discussed in Chapter 10. For now, type:

)

FULL INIT COMPLETE

COMMAND?

Figure 3-1. Running DOSINIT.SV on a Hard Disk NOVA

Licensed Material-Property of Data General Corporation

g. If you have a sealed single-platter disk, you're done; type STOP) and skip the rest of step 10. If you have a dual-platter disk, you need to initialize the fixed disk. Type:

DISK)

DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER?

h. Type:

6045)

DISK UNIT?

i. Type:

DP0F)

COMMAND?

j. Execute steps 9 through 9f to initialize the fixed disk, then type:

STOP)

Figure 3-1. Running DOSINIT.SV on a Hard Disk NOVA (continued)

Installing the Bootstrap Root

Next, install the disk bootstrap root on your disk(s). Later, this will help you to start up a DOS system from this disk.

10. Repeat the appropriate program load steps for your hardware:

    a. If your computer has a programmed console, type:

    100033L

    on the system console after the ! prompt. Go to step 11.

    b. If your computer has hardware data switches and automatic program load, lift the RESET switch, then the PROGRAM LOAD switch. Go to step 11.

    c. If your computer has hardware data switches but does not have automatic program load, execute the full step 3c described earlier.

11. BOOT.SV comes into memory again; it asks for the filename you want:

    FILENAME?

    (If nothing happens, open and close the door to diskette drive 0 and repeat step 10.)

    Type:

    BOOT)

    This loads the installer part of BOOT.SV. BOOT announces itself, then asks:

    BOOTSTRAP DEVICE SPECIFIER?

12. Respond with the name of your hard disk, which is DP1:

    DP1)

    INSTALL BOOTSTRAP (Y OR N)?

13. Respond with Y:

    Y

    DONE.

    BOOTSTRAP DEVICE SPECIFIER?

    If you have a dual-platter disk, type DP1F), then Y, to install a bootstrap root on the fixed disk.

Licensed Material-Property of Data General Corporation

Installing the DOS Starter System

At this point, you're already to install the DOS starter system. BOOT is still asking for a BOOTSTRAP DEVICE SPECIFIER.

14. Get BOOT to ask *FILENAME* by typing the primary diskette name (DP0) and N:

    DP0)

    INSTALL BOOTSTRAP (Y OR N)

15. Type:

    N

    FILENAME?

16. Respond with the starter system name, BOOTSYS:

    BOOTSYS)

    BOOT will now bring up the starter system, BOOTSYS.SV, from diskette. Soon, the starter system will come up and type out:

    DOS REV x.xx
    DATE (M/D/Y)?

17. Enter the current date, in the format "month date year", for example:

    1 16 79)

    Next, it asks for the time:

    TIME (H:M:S) ?

18. Enter the time, in the format "hours-in-24 minutes seconds". The seconds entry is optional; for example:

    15 05)

    Now the starter system invokes the Command Line Interpreter, which types its prompt:

    R

    The DOS Starter System is running from diskette.

19. Make the hard disk(s) available to DOS by typing INIT/F to it:

    a. INIT/F DP1)
       R

    b. With a dual-platter disk subsystem, also type INIT/F DP1F).

       The INIT command with the /F switch writes a new file and map directory to disk or diskette. You *must* type INIT/F to any blank disk or diskette you plan to use on the system. INIT/F destroys all files on the destination disk or diskette, but there are no files on your hard disk(s) at this point.

20. Now, copy all files from diskette to the hard disk. This will take some time because file transfers from diskette take time to execute -- don't be alarmed at the delay, and wait for the R prompt. Type:

    MOVE/V DP1)

    (The CLI verifies filenames copied to the hard disk.)

    R

    This step gives the hard disk all files it needs to start up and run DOS, including BOOT.SV and the Command Line Interpreter.

21. Bring up the starter system on the hard disk by typing:

    BOOT DP1:BOOTSYS)

    MASTER DEVICE RELEASED

    DOS REV x.xx
    DATE (M/D/Y) ?

22. Type in the date again; for example:

    1 16 79)

    TIME (H:M:S)?

23. Type in the time; for example:

    15 10)

    The starter system invokes the CLI, which issues the prompt:

    R

    (If the starter system doesn't come up, execute steps 10-23 again.)

    The diskette has been released and the starter system is now running from the hard disk. The starter system is stored under the filename BOOTSYS.SV; its overlays are in file BOOTSYS.OL. If need be, you can execute the program load steps and bring it up by typing BOOTSYS) when BOOT asks *FILENAME?*.

Licensed Material-Property of Data General Corporation

The Next Steps

If you have a double-density diskette, go to step 26.

For a single-density diskette, you need to copy the DOS utility files from the UTILITIES diskette to your hard disk. To do this:

24. Remove MY STARTER DISKETTE or the DG STARTER diskette from its drive (0) and store it safely. Insert the DG-supplied UTILITIES diskette in this drive. Don't cover the write-protect hole.

25. Initialize the UTILITIES diskette and copy the files over by typing:

```
IN T DP0)
WARNING: DISK WRITE PROTECTED
R
LOAD/V DP0:UTILITIES)
```

(The CLI verifies files copied.)

```
R
```

26. You have now finished loading the DOS software files and are nearly done with the pre-SYSGEN procedure. Release the hard disk by typing:

```
RELEASE %MDIR%)
```

DOS will then sign off and type:

MASTER DEVICE RELEASED

27. Next you must make the disk into drive 0 and the diskette into drive 1.

    a. For a sealed model 6099 disk, turn to the disk front panel and move the right-hand toggle switch, marked DRIVE 0 SELECT, to the right, i.e., to the DSK0/FPY1 position. Replace the front panel cover on the disk drive.

    b. For a dual-platter disk, dial 1 on the diskette drive and 0 on the disk drive.

Your starter system, SYSGEN libraries, and other DOS software are complete on the hard disk. Remove the diskette from its drive, replace it in its outer envelope, and store all diskettes safely. If the diskette drive has its own ON/OFF switch, you can turn it OFF.

From now on, the disk name will be DP0 (and, for a dual-platter disk, the fixed disk name will be DP0F). The primary diskette name will be DP1, so, if you labeled the diskette drive PRIMARY, cross out PRIMARY and write DP1.

You're done with the preparation and ready to generate a tailored DOS system. To do so, go to Chapter 6. This procedure will be *much* easier than what you've done already.

Figure 3-2 summarizes the steps you take to run DOSINIT, install the bootstrap root, and install the starter system. When you have a DOS system running, you need not execute all these steps to ready a new disk or diskette for use; instead use the CLI command BOOT DOSINIT) to run DOSINIT or BOOT BOOT) to install a bootstrap root.

Execute preliminary steps (power up devices) in Chapter 1.

1. Make diskette drive 0:

   a. If neither disk or diskette has a thumbwheel drive number selector, remove disk front panel and throw DRIVE 0 SELECT toggle switch to DSK1/FPY0 position.

   b. If disk and diskette drives have thumbwheel selectors, dial 1 on disk and 0 on diskette.

2. Open diskette door and insert DG-supplied NOVA DOS diskette (NOVA DOS STARTER diskette for single-density systems).

3. Program load your computer:

   a. With a programmed console type 100033L on system console.
   b. With hardware data switches and automatic program load, set the data switches to 100033 octal (switches 0, 11, 12, 14 and 15 up, others down). Lift the RESET switch, then the PROGRAM LOAD switch.
   c. Without auto parogram load, execute full step 3c earlier.

Figure 3-2. Installing the NOVA Starter System on a Hard Disk

Licensed Material-Property of Data General Corporation

4. *FILENAME?* DOSINIT)

5. *DOSINIT REV x.xx*
   DISK DRIVE MODEL NUMBER?

6. If you have two diskette drives, copy DG original diskette as described in full step 6, earlier. With only one drive, proceed but follow the instructions very carefully.

7. *DISK DRIVE MODEL NUMBER?* 6099) or 6045) for dual platter disk)
8. *DISK UNIT?* DP1)

9. *COMMAND?* FULL)

   FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE.
   .....

   a. DO YOU REALLY WANT A FULL INIT (YES OR NO) ? YES)

   b. *NUMBER OF PATTERNS TO RUN (1-5)?* 5)

      ****PATTERN NUMBER 1 (125252) ****
      ****PATTERN NUMBER 2 (052525) ****

      ****ALL PATTERNS RUN ****

   c. *DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE?* NO)

   d. *DEFAULT REMAP AREA IS 12 BLOCKS LONG*
      IT NEEDS TO BE AT LEAST yy BLOCKS LONG
      REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?)

   e. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?*)

   f. *DEFAULT FRAME IS nn*
      MIN IS 1 and MAX IS mm
      DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

      FULL INIT COMPLETE

      COMMAND?

   g. For sealed single-platter disks, type STOP) and skip to next step. For dual-platter disks, type:

      DISK)

   h. *DOSINIT REV x.xx*
      DISK DRIVE MODEL NUMBER? 6045)

   i. *DISK UNIT?* DP1F)

   j. Execute steps 9 through 9f; then type STOP).

10. Program load via step 3.

11. *FILENAME?* BOOT)

    BOOT REV x.xx

Figure 3-2. Installing the NOVA Starter System on a Hard Disk (continued)

Licensed Material-Property of Data General Corporation

12. *BOOTSTRAP DEVICE SPECIFIER?* DP1)

13. *INSTALL BOOTSTRAP (Y OR N)?* Y

    DONE.

    BOOTSTRAP DEVICE SPECIFIER?

For dual-platter disks, type DP1F) and Y to install root on fixed disk.

14. *BOOTSTRAP DEVICE SPECIFIER?* DP0)

15. *INSTALL BOOTSTRAP (Y OR N)?* N

16. *FILENAME?* BOOTSYS)
    DOS REV x.xx

17. *DATE (M/D/Y)?* 1 16 79) (enter date)

18. *TIME (H:M:S)?* 15 05) (enter time)

    R

19. Fully initialize the hard disk(s):

    a. INIT/F DP1)
       R

    b. INIT/F DP1F) (fixed disk in dual-platter systems)
       R

20. MOVE/V DP1)

    .
    (verification of files copied to disk)
    .
    R

21. BOOT DP1:BOOTSYS)

    MASTER DEVICE RELEASED

    DOS REV x.xx

22. *DATE (M/D/Y)?* 1 16 79) (Enter date)

23. *TIME (H:M:S)?* 15 10) (Enter time)

    R

    For double density, skip to step 26.

24. For single density, remove the diskette from drive DP0 and insert the DG-supplied UTILITIES diskette in DP0.

25. INIT DP0)
    WARNING: DISK WRITE PROTECTED
    R
    LOAD/V DP0:UTILITIES)
    .
    (verification of files loaded onto cartridge)
    R

Figure 3-2. Installing the NOVA Starter System on a Hard Disk (continued)

Licensed Material-Property of Data General Corporation

26. RELEASE %MDIR%)

    MASTER DEVICE RELEASED

27. Make disk drive 0 and diskette drive 1:
    a. If disk and diskette lack thumbwheel selectors, move disk toggle switch to the right, to DSK0/FPY1 position. Replace disk front panel.
    b. If disk and diskette have selectors, dial 0 on disk and 1 on diskette.

Go to Chapter 6 to generate a tailored DOS system.

Figure 3-2. Installing the NOVA Starter System on a Hard Disk (continued)

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 4
Preparing for System Generation with Diskette-Based microNova Hardware

This chapter explains the steps you must execute before generating your first DOS system on diskette-based, microNOVA equiment.

We assume that you have the following hardware:

- microNOVA computer;
- double- or single-density diskette unit with two drives;
- system console -- keyboard/printer or keyboard/display terminal.

We also assume that you have at least two properly formatted blank diskettes (preferably Data General diskettes).

Before generating a DOS system, you'll prepare two blank diskettes using the DOS initializer program, DOSINIT.SV. (Running DOSINIT is required procedure for *any* diskette you plan to use in your system.) For safety, you'll then use DOSINIT to copy the DG-supplied diskette to one of these diskettes. Then you'll use program BOOT.SV to install a *bootstrap root* program on the other diskette. Finally, you'll bring up the DOS starter system, which allows you to load other programs and to generate your tailored DOS system.

In describing the procedures in this chapter, we assume that your diskette subsystem contains two drives, and that it is connected to device code 26 octal (for double-density systems) or 33 octal (for single-density systems). (You can, of course, have other subsystems, but at least one dual-drive subsystem must be connected to the proper device code.)

The primary emphasis is on double-density diskettes, but, where a step differs for single-density diskettes, we cite the difference -- often in a parenthetical phrase. For example, if topic "something" applies to double-density diskettes but not to single-density diskettes, we'll say:

SOMETHING ... (this doesn't apply to single-density diskettes)

The System Diskette(s)

Data General supplies DOS software on diskette medium: one diskette for double-density drives, two diskettes for single-density drives. (You may also have received additional DOS software on other diskettes.) To prepare for system generation with a double-density diskette, you'll use the lone microNOVA DOS diskette; with a single-density diskette, you'll use the microNOVA STARTER diskette.

Table 4-1 shows the filenames of the programs that you'll use to generate your first system. At this point, you need not know about the other utility programs supplied with DOS; later, you can read about these in Chapter 9.

For any system, check the Release Notice provided with the system for the diskette number(s) and verify that the diskette label number(s) match these numbers.

Licensed Material-Property of Data General Corporation

Table 4-1. Programs Used in System Generation

Program Filename	Program Purpose
DOSINIT.DV	A disk initializer that you must run on a disk or diskette before you can use it.
BOOT.SV	BOOT can either install a loader root program on disk or diskette or start up DOS from a disk or diskette.
MBOOTSYS.SV, MBOOTSYS.OL	Starter system save and overlay files on microNOVA diskette.
BOOTSYS.SV, BOOTSYS.OL	Starter system save and overlay files on NOVA diskette.
CLI.SV, CLI.OL, CLI.ER	The Command Line Interpreter (CLI) save, overlay, and error files. The CLI allows you to communicate with DOS from the system console.
MDOSA.LB, MDOSC.LB, MDOSI.LB, MDOSO.LB	SYSGEN libraries on microNOVA diskette.
DOSA.LB, DOSB.LB, DOSC.LB, DOSI.LB, DOSO.LB	SYSGEN libraries on NOVA diskette. SYSGEN uses the SYSGEN libraries to build a tailored DOS system.
RLDR.SV, RLDR.OL	The relocatable loader files. SYSGEN uses the loader to build your DOS system from the library files.
SYSGEN.SV	This program asks you questions and uses your answers to build a tailored DOS system.
ALMSPD.SR	Source (parameter) file for Asynchronous Line Multiplexor (ALM) line configuration.
ALMSPD.RB	Assembled binary file for ALM. More about these ALM files later.

Diskette Drive Numbers

You must identify diskette drive 0 because you'll use it to load programs. In fact, all DOS operations will be easier if you label drive 0 and drive 1. Temporarily, label the drives according to your hardware. For double-density drives, label the left drive DE0 and the right drive DE1. For single-density drives, label the left drive DP0 and the right drive DP1. If this is wrong, you'll discover it later, and we'll tell you to swap the labels. If you have more than two drives, identify the primary enclosure and label its drive as above. You can label the others after system generation.

Running DOSINIT

Now, assuming you've executed the preliminary steps shown at the end of Chapter 1 (system console on LINE, ALPHA LOCK if applicable, power on to other devices), you're ready to proceed. All steps presume a properly formatted diskette; i.e., one made and supplied by Data General.

1. Tape the write-protect holes on two blank diskettes and affix labels to them as described in Chapter 1.

   Using a felt-tipped pen, write on one of these diskette labels MY STARTER DISKETTE (or an equivalent name) and the date. On another label, write MY SYSTEM DISKETTE and the date.

Licensed Material-Property of Data General Corporation

2. a. Get the Data General microNOVA DOS diskette (microNOVA STARTER diskette for a single-density system). Do *not* cover the write-protect hole on this diskette. Open the door to diskette drive 0 by pressing the latch button (double-density drives) or depressing the latch tab (single-density drives). Slide the diskette, label up and toward you, firmly into its slot. When it stops sliding, release it and close the diskette door. (Details on inserting a diskette appear in Chapter 1.)

   b. Insert your labeled MY SYSTEM DISKETTE in drive 1. This is the unused drive in the enclosure that holds drive 0.

3. Execute the program load steps on your microNOVA computer:

   a. If your microNOVA has a programmed console, the *system* console should show an exclamation point (!) prompt. If it has the console debug option, the system console will show nothing. With either a programmed console or console debug option, find n in Table 4-2, then type:

      nL (e.g., 100026L or 33L)

      on the system console and go to step 4.

   b. If your microNOVA has the hand-held console option, press the RESET key, then the CLR D key. Enter n from Table 4-2 (e.g., 100026 or 33) in the display. Press the PR LOAD key firmly and go to step 4.

   c. If you lack the programmed console, console debug, and hand-held console, press the computer panel rocker switch to the PL/START position. Go to step 4.

4. The computer now reads program BOOT.SV from the DG-supplied diskette. BOOT.SV types out on the sytem console:

   FILENAME?

(If nothing happens, open and close the door to drive 0 and try step 3 again. If this doesn't work, swap the diskettes in the drives and try step 3 again. If this works, the right-hand drive is drive 0; swap the labels and proceed. If swappping doesn't work, tape the write-protect hole on the DG-supplied diskette, reinsert it, and try step 3 again. If this works, proceed, but follow instructions very carefully. If taping doesn't work, you'll need to see the *microNOVA Technical Reference Manual* and check the device code jumpers.) *

Answer the question with DOSINIT's name:

DOSINIT)

5. BOOT.SV now reads DOSINIT.SV into memory. DOSINIT announces itself and asks for the model number of your drive:

   DOSINIT REV x.xx (*x.xx* is the revision number.)
   DISK DRIVE MODEL NUMBER?

6. Type in the model number of your drive, from the third column of Table 4-2, e.g., 6096).

If you give an invalid response to any DOSINIT question, DOSINIT will type out an appropriate error message and repeat the question. If you get a DEVICE TIMEOUT message, the device you specified either does not exist or is not on line; correct your entry. If you make a typing mistake, press the DEL or RUBOUT key to remove bad characters one by one. DOSINIT echoes an underscore (_) or backarrow (<) for each character erased. If DOSINIT stops responding altogether after an entry , go back to step 3.

Table 4-2. microNOVA Diskette Device Codes, Model Numbers, and Diskette Names

Disk(ette) Type	n =	Model Number for DOSINIT	Drive 0 and Drive 1 Diskette Names
Double Density	100026	6096)	DE0, DE1
Single Density	33	6038)	DP0, DP1

Licensed Material-Property of Data General Corporation

7. Now, DOSINIT types:

   DISK UNIT?

   which is a request for the name of the drive holding the blank diskette. Type in the name for drive 1, from the last column of Table 4-2, e.g., DE1).

   COMMAND?

8. DOSINIT has accepted the diskette information and now wants a COMMAND. Type:

   FULL)

With this, you request full initialization of the diskette in drive 1. DOSINIT will ask for verification, then check the diskette for *bad blocks* (portions that will not retain information). It does this by writing patterns of data to the diskette and reading them back. Follow the steps shown in Figure 4-1, below. Each pattern takes a minute or so to run, so don't be alarmed when you have to wait.

If the dialog varies from that shown in the figure, consult Chapter 10, the "FULL Command," for recovery procedures.

8. *COMMAND?* FULL)

   FULL INIT DESTROYS ALL PREVIOUS DISKETTE STRUCTURE.
   DOS INIT/F MUST BE ISSUED AFTER FULL INIT.
   DO YOU REALLY WANT A FULL INIT? (YES OR NO)

   a. Type: YES)

   b. *NUMBER OF PATTERNS TO RUN (1-5)?* 5) (Questions b through f are not asked for single-density diskettes.)

      ****PATTERN # 1 (125252)****
      ****PATTERN # 2 (052525)****
      ****PATTERN # 3 (155555)****
      ****PATTERN # 4 (000000)****
      ****PATTERN # 5 (177777)****

      ****ALL PATTERNS RUN****

      DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT
      ARE NOT ALREADY IN THE BAD BLOCK TABLE?

   c. Type: NO)

      DEFAULT REMAP AREA IS 12 BLOCKS LONG
      IT NEEDS TO BE AT LEAST n BLOCKS LONG
      REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?)

   d. Type:)

      REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?)

   e. Type:)

      DEFAULT FRAME SIZE IS nn
      MIN IS 1 AND MAX IS mm
      DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

Figure 4-1. Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (microNOVA)

Licensed Material-Property of Data General Corporation

f. Type:)

FULL INIT COMPLETE

COMMAND?

g. Type: COPY)

COPY DISK(ETTE) IS ON DRIVE xx
NOW TELL ME ABOUT THE ORIGINAL DISK(ETTE)
DISK DRIVE MODEL NUMBER?

h. Type:

6096) (double-density)
6038) (single-density)

DISK UNIT?

i. Type: DP0)

I AM ABOUT TO COPY XX0 to XX1 IS THIS CORRECT?
ANSWER (YES) TO CONTINUE (NO) TO STOP

j. Type: YES)

DOSINIT now copies the DG STARTER diskette, which takes a few moments. Then it says:

I HAVE FINISHED MAKING YOUR COPY
ANOTHER COPY?

k. Type: NO)

COMMAND?

l. Remove the DG original diskette from drive 0, replace it in the envelope, and store it safely. Take your labeled MY STARTER DISKETTE from the other drive (drive 1), insert it in drive 0, and close the door to drive 0.

Take the blank diskette which you labeled MY SYSTEM DISKETTE, insert it in drive 1, and close the door to drive 1.

m. Type: FULL)

FULL INIT DESTROYS ALL PREVIOUS...
DOS INIT/F MUST BE DONE...
DO YOU REALLY WANT A FULL INIT (YES OR NO)?

n. Type: YES)

NUMBER OF PATTERNS TO RUN (1-5)?

(Questions o through s are not asked for single-density diskettes.)

Figure 4-1. Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (microNOVA) (continued)

Licensed Material-Property of Data General Corporation

o. Type: 5)

****PATTERN # 1 (125252)****

(DOSINIT runs patterns.)

DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE?

p. Type: NO)

DEFAULT REMAP AREA IS 12 BLOCKS LONG
IT NEEDS TO BE AT LEAST yy BLOCKS LONG
REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?

q. Type:)

REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?

r. Type:)

DEFAULT FRAME SIZE IN nn
MIN IS 1 AND MAX IS mm
DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?

s. Type:)

FULL INIT COMPLETE
COMMAND?

* t. Type: STOP)

Figure 4-1. Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (microNOVA) (continued)

Installing the Bootstrap Root

Next, you'll want to put the disk bootstrap root on your diskette. Later, this will allow you to start up your DOS system from this diskette. Your MY SYSTEM DISKETTE should still be in drive 1.

9. Repeat the appropriate program load steps for your hardware:

   a. If your computer has a programmed console (! prompt) or console debug, type:

      nL (e.g., 100026L or 33L, from Table 4-2)

      on the system console and go to step 10.

   b. If you have the hand-held console option, press the RESET key, then the CLR D key. Enter n from Table 4-2 (e.g., 100026 or 33) in the display. Press the PR LOAD key and go to step 10.

   c. If you lack the features and options above, you have the CPU program load option. Press the computer panel rocker switch to the PL/START position.

10. BOOT.SV comes into memory again; it asks for the filename of the program you want:

    FILENAME?

    Type BOOT, the filename of the bootstrap root installer.

    BOOT)

11. This loads the installer portion of BOOT.SV, BOOT asks:

    BOOTSTRAP DEVICE SPECIFIER?

    Respond with the name of the diskette in drive 1, from Table 4-2; i.e., DE1) for double density.

Licensed Material-Property of Data General Corporation

12. BOOT then asks:

    INSTALL BOOTSTRAP (Y OR N)?

    Type:

    Y

    This writes the bootstrap root on the diskette, and BOOT says:

    DONE.
    BOOTSTRAP DEVICE SPECIFIER?

Bringing Up the DOS Starter System

At this point, you're ready to bring up the DOS starter system. Your MY SYSTEM DISKETTE should still be in drive 1.

13. Force BOOT to ask FILENAME? by typing the name of your copy diskette from Table 4-2, e.g., DE0) for double-density.

    INSTALL BOOTSTRAP (Y OR N)

14. Type:

    N

15. BOOT now asks:

    FILENAME?

    Respond with your copy diskette name, a colon, and the starter system name. Type: DE0: MBOOTSYS) (double density) or DP0:MBOOTSYS) (single density)

    BOOT now loads the starter system into the computer. This takes a few moments. The starter system announces itself and asks for the date:

    MICRONOVA DOS REV x.xx

    DATE (M/D/Y)?

16. Enter the current date, in the format "month date year" for example:

    1 16 79)

    Next, it asks for the time:

    TIME (H:M:S)?

17. Type in the time in the format "hours-in-24 minutes seconds". The seconds entry is optional. For example:

    15 05)

    MBOOTSYS now proceeds to invoke the Command Line Interpreter (CLI). When the CLI types its prompt letter:

    R

    MBOOTSYS is running from the diskette in drive 0.

18. MY SYSTEM DISKETTE should still be in drive 1. Make this diskette available to DOS by typing:

    INIT/F DE1) (for double density)

    or

    INIT/F DP1) (for single density)
    R

    INIT/F writes a new file directory to the diskette. You must use this after running the DOSINIT FULL command on a diskette, but you should never use it on a diskette which holds valuable data because it effectively destroys all files on the diskette.

19. For a double-density system, go to step 20. For a single-density system, type

    MLM)

    This executes a CLI macro file (MLM.MC) that sets up DP1 with links for system generation. Wait for the R prompt.

20. At this point, you're done with the preparation procedure. If you want to generate a tailored system now, go to Chapter 6.

    If you want to rest for a while, type:

    RELEASE DE0) (double density)

    or

    RELEASE DP0) (single density).

    This terminates DOS operations. DOS displays a sign-off message:

    MASTER DEVICE RELEASED

    and halts. Later, you'll need to bring MBOOTSYS up again to generate your tailored system. Use the normal program-load sequence, covered at the beginning of Chapter 6.

    Figure 4-3 summarizes the steps you take to run DOSINIT, install a bootstrap root, and install the starter system on diskette. When you have a DOS system running, you need not execute all these steps to ready a diskette; instead you can use the CLI command BOOT DOSINIT) to run DOSINIT or BOOT BOOT) to install a bootstrap root.

Licensed Material-Property of Data General Corporation

Execute preliminary steps (power up devices) in Chapter 1.

1. Tape write-protect hole on two blank Data General diskettes; with a felt-tipped pen, write MY STARTER DISKETTE on one of these, and MY SYSTEM DISKETTE on the other.

2. a. Get the DG-supplied microNOVA DOS diskette (microNOVA STARTER diskette for single density) and insert it in drive 0; close the door.
   b. Insert your labeled blank MY STARTER DISKETTE in drive 1; close the door.

3. Program load your computer:

   a. With programmed console (! prompt) or console debug, type nL from Table 4-2 (e.g., 100026L or 33L on system console.
   b. With a hand-held console, press RESET, CLR D, enter n (e.g., 100026 or 33) from Table 4-2 in display, press PR LOAD.
   c. With CPU program load, press rocker switch to PL/START.

4. *FILENAME?*

5. DOSINIT)

6. *DOSINIT REV x.xx*
   DISK DRIVE MODEL NUMBER? 6096) (6038) for single density)

7. *DISK UNIT?* DE1) (DP1) for single density)

8. *COMMAND?* FULL)

   a. *COMMAND DESTROYS ANY PREVIOUS...*
      DO YOU REALLY WANT A FULL INIT? (YES OR NO) YES)

   b. *NUMBER OF PATTERNS TO RUN (1-5)?* 5) (8b-8f skipped for single density)

      **** PATTERN NUMBER 1 (125252) ****
      **** PATTERN NUMBER 2 (052525) ****

      .

      (DOSINIT runs patterns)

      .

      **** ALL PATTERNS RUN ****

   c. *DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE?* NO)

   d. *DEFAULT REMAP SIZE IS 12 BLOCKS LONG*
      IT NEEDS TO BE AT LEAST n BLOCKS LONG
      REMAP AREA SIZE (TYPE RETURN FOR DEFAULT))

   e. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?*)

   f. *DEFAULT FRAME SIZE IN nn*
      MIN IS 1 AND MAX IS mm
      DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

      FULL INIT COMPLETE

   g. *COMMAND?* COPY)

Figure 4-2. Preparing for First SYSGEN on a Diskette-Based microNOVA Configuration

Licensed Material-Property of Data General Corporation

h. *COPY DISKETTE IS ON DRIVE xx1*
NOW TELL ME ABOUT THE ORIGINAL DISKETTE
DISK DRIVE MODEL NUMBER? 6096) (6038) for single density)

i. *DISK UNIT?* DE0) (DP0) for single density)

j. *I AM ABOUT TO COPY xx0 to xx1. IS THIS CORRECT?*
ANSWER (YES) TO CONTINUE (NO) TO STOP YES)

(pause)

k. *I HAVE FINISHED MAKING YOUR COPY*
ANOTHER COPY? NO)

COMMAND?

l. Remove the DG original diskette from drive 0; replace in envelope and store safely. Take copy from drive 1, insert in drive 0; close door.

Insert MY SYSTEM DISKETTE from step 1 in drive 1.

m. FULL)

n. *FULL INIT DESTROYS...*
DO YOU REALLY WANT A FULL INIT (YES OR NO) YES)

o. *NUMBER OF PATTERNS TO RUN (1-5)?* 5) (8o through 8s skipped for single density)

**** PATTERN NUMBER 1 (125252) ****

(patterns run)

p. *DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT*
ARE NOT ALREADY IN THE BAD BLOCK TABLE? NO)

q. *DEFAULT REMAP AREA IS 12 BLOCKS LONG*
...REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?)

r. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?*)

s. *DEFAULT FRAME SIZE IS nn*
...DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

t. *FULL INIT COMPLETE*
COMMAND? STOP)

9. Program load your computer:
   a. With hand-held console, press RESET, CLR D, enter n (e.g., 100026) in display, press PR LOAD and go to next step.
   b. With console debug, type nL (e.g., 100026L) on system console, go to next step.
   c. With CPU program load, press computer panel switch to PL/START.

10. *FILENAME?* BOOT)

11. *BOOT REV x.xx*
BOOTSTRAP DEVICE SPECIFIER? DE1) (DP1) for single density)

Figure 4-2. Preparing for First SYSGEN on a Diskette-Based microNOVA Configuration (continued)

Licensed Material-Property of Data General Corporation

12. *INSTALL BOOTSTRAP (Y OR N)* Y

    DONE.

    BOOTSTRAP DEVICE SPECIFIER?

13. DE0) (DP0) for single density)

14. *INSTALL BOOTSTRAP (Y OR N)* N

15. *FILENAME?* DE0:MBOOTSYS) (DP0:MBOOTSYS) for single density)
    (pause)

16. *MICRONOVA DOS REV x.xx*
    DATE (M/D/Y)? 1 16 79) (enter current date)

17. *TIME (H:M:S)?* 15 05) (current time in 24-hour format)

    R

18. INIT/F DE1) (INIT/F DP1) for single-density systems)

19. For double density, go to step 20. For single density, type:

    MLM)
    (pause)
    R

20. Continue to Chapter 6 or type RELEASE DE0) (DP0 for single density)

Figure 4-2. Preparing for First SYSGEN on a Diskette-Based microNOVA Configuration (continued)

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 5
Preparing for System Generation with Diskette-Based NOVA Hardware

This chapter explains the steps you must execute before generating your first DOS system on diskette-based, NOVA equipment.

We assume that you have the following hardware:

- NOVA computer;
- double- or single density diskette unit with two drives;
- system console -- keyboard/printer or keyboard/display terminal.

We also assume that you have at least two properly formatted blank diskettes (preferably Data General diskettes).

Before generating a DOS system, prepare two blank diskettes using the DOS initializer program, DOSINIT.SV. (Running DOSINIT is required procedure for *any* diskette you plan to use in your system.) For safety, you'll then use DOSINIT to copy the DG-supplied diskette to one of these diskettes. Then you'll use program BOOT.SV to install a *bootstrap root* program on the other diskette. Finally, you'll bring up the DOS starter system, which allows you to load other programs and to generate your tailored DOS system.

In describing the procedures in this chapter, we assume that your diskette subsystem contains two drives, and that it is connected to device code 33 octal. (You can, of course, have other subsystems, but at least one dual-drive subsystem must be connected to the proper device code.)

The primary emphasis is on double-density diskettes, but, where a step differs for single-density diskettes, we cite the difference -- often in a parenthetical phrase. For example, if topic "something" applies to double-density diskettes but not to single-density diskettes, we'll say:

SOMETHING ... (this doesn't apply to single-density diskettes)

The System Diskette(s)

Data General supplies DOS software on diskette medium: one diskette for double-density drives, two diskettes for single-density drives. (You may also have received additional DOS software on other diskettes.) To prepare for system generation with a double-density diskette, you'll use the lone NOVA DOS diskette; with a single-density diskette, you'll use the NOVA STARTER diskette.

Table 5-1 shows the filenames of the programs that you'll use to generate your first system. At this point, you need not know about the other utility programs supplied with DOS; later, you can read about these in Chapter 9.

For any system, check the Release Notice provided with the system for the diskette number(s) and verify that the diskette label number(s) match these numbers.

Licensed Material-Property of Data General Corporation

Table 5-1. Programs Used in System Generation

Program Filename	Program Purpose
DOSINIT.DV	A disk initializer that you must run on a disk or diskette before you can use it.
BOOT.SV	BOOT can either install a loader root program on disk or diskette or start up DOS from a disk or diskette.
MBOOTSYS.SV, MBOOTSYS.OL	Starter system save and overlay files on microNOVA diskette.
BOOTSYS.SV, BOOTSYS.OL	Starter system save and overlay files on NOVA diskette.
CLI.SV, CLI.OL, CLI.ER	The Command Line Interpreter (CLI) save, overlay, and error files. The CLI allows you to communicate with DOS from the system console.
MDOSA.LB, MDOSC.LB, MDOSI.LB, MDOSO.LB	SYSGEN libraries on microNOVA diskette.
DOSA.LB, DOSB.LB, DOSC.LB, DOSI.LB, DOSO.LB	SYSGEN libraries on NOVA diskette. SYSGEN uses the SYSGEN libraries to build a tailored DOS system.
RLDR.SV, RLDR.OL	The relocatable loader files. SYSGEN uses the loader to build your DOS system from the library files.
SYSGEN.SV	This program asks you questions and uses your answers to build a tailored DOS system.
ALMSPD.SR	Source (parameter) file for Asynchronous Line Multiplexor (ALM) line configuration.
ALMSPD.RB	Assembled binary file for ALM. More about these ALM files later.

Diskette Drive Numbers

You must identify diskette drive 0 because you'll use it to load programs. In fact, all DOS operations will be easier if you label drive 0 and drive 1. If you have single-density drives, you can simply dial 0 on the left drive and 1 on the right drive. For double-density drives, label the left drive DP0 and the right drive DP1. If this is wrong, you'll discover it later, and we'll tell you to swap the labels. If you have more than two drives, identify the primary enclosure and identify its drives as above. You can label the others after system generation.

Running DOSINIT

Now, assuming you've executed the preliminary steps shown at the end of Chapter 1 (system console on LINE, ALPHA LOCK if applicable, power on to other devices), you're ready to proceed. All steps presume a properly formatted diskette; i.e., one made and supplied by Data General.

1. Tape the write-protect holes on two blank diskettes and affix labels to them as described in Chapter 1.

   Using a felt-tipped pen, write on one of these diskette labels MY STARTER DISKETTE (or equivalent name) and the date. On another label, write MY SYSTEM DISKETTE and the date.

Licensed Material-Property of Data General Corporation

2. a. Get the Data General NOVA DOS diskette (NOVA STARTER diskette for a single-density system). Do *not* cover the write-protect hole on this diskette. Open the door to diskette drive 0 by pressing the latch button (double-density drives) or depressing the latch tab (single-density drives). Slide the diskette, label up and toward you, firmly into its slot. When it stops sliding, release it and close the diskette door. (Details on inserting a diskette appear in Chapter 1.)

   b. Insert your labeled MY SYSTEM DISKETTE in drive 1. This is the unused drive in the enclosure that holds drive 0.

3. Execute the program load steps on your NOVA computer:

   a. If your computer has a programmed console, the CRT or printing system console should show a number and an exclamation point (!) prompt. (If not, flip the computer power switch OFF and ON.) Type:

      100033L

      on the system console and go to step 4.

   b. If your computer has hardware data switches and automatic program load (APL), set the data switches to 100033 octal switches 0, 11, 12, 14, and 15 up, the others down). Lift the RESET switch, then the PROGRAM LOAD switch, and go to step 4.

   c. If your computer has hardware data switches but lacks APL, you'll key a two-word program into the switches. Follow these steps (we list them here, then refer you to this section later).

      - Set the data switches to 376 octal (switches 8 through 14 up, the others down).
      - Lift the EXAMINE switch, hold it up, and verify that the ADDRESS lights match the switch settings.
      - Set the data switches to 060133 octal (switches 1, 2, 9, 11, 12, 14, and 15 up, the others down.)
      - Lift the DEPOSIT switch and hold it up; verify that the lights match the switch settings.
      - Set the data switches to 000377 octal (switches 8 through 15 up, the others down).
      - Depress the DEPOSIT NEXT switch and hold it down; verify that the lights match the switch settings.
      - Set the data swtiches to 000376 octal again (put down switch 15); lift and release the RESET switch, then the START switch. Go to step 4.

4. The computer now reads program BOOT.SV from the DG-supplied diskette. BOOT.SV types out on the system console:

   FILENAME?

(If nothing happens, open and close the door to drive 0 and try step 3 again. If this doesn't work, swap the diskettes in the drives and try step 3 again. If this works, the right-hand drive is drive 0; swap the labels and proceed. If swapping doesn't work, tape the write-protect hole on the DG-supplied diskette, reinsert it, and try step 3 again.)

Answer the question with DOSINIT's name:

DOSINIT)

5. BOOT.SV now reads DOSINIT.SV into memory. DOSINIT announces itself and asks for the model number of your drive:

   DOSINIT REV x.xx (*x.xx* is the revision number.)
   DISK DRIVE MODEL NUMBER?

6. Type in the model number of your drive, from the third column of Table 5-2, e.g., 6097).

Table 5-2. NOVA Diskette Device Codes, Model Numbers, and Diskette Names

Diskette Type	Device Code (Octal)	Model Number for DOSINIT	Drive 0 and Drive 1 Diskette Names
Double Density	100033	6097)	DP0, DP1
Single Density	100033	6030)	DP0, DP1

Licensed Material-Property of Data General Corporation

If you give an invalid response to any DOSINIT question, DOSINIT will type out an appropriate error message and repeat the question. If you get a DEVICE TIMEOUT message, the device you specified either does not exist or is not on line; correct your entry. If you make a typing mistake, press the DEL or RUBOUT key to remove bad characters one by one. DOSINIT echoes an underscore (_) or backarrow (<) for each character erased. If DOSINIT stops responding altogether after an entry, go back to step 3.

7. Now, DOSINIT types:

   DISK UNIT?

   which is a request for the name of the drive holding the blank diskette. Type in the name for drive 1, from the last column of Table 5-2, i.e., DP1)

   COMMAND?

8. DOSINIT has accepted the diskette information and now wants a COMMAND. Type:

   FULL)

   With this, you request full initialization of the diskette in drive 1. DOSINIT will ask for verification, then check the diskette for *bad blocks* (portions that will not retain information). It does this by writing patterns of data to the diskette and reading them back. Follow the steps shown in Figure 5-1, below. Each pattern takes a minute or so to run, so don't be alarmed when you have to wait.

   If the dialog varies from that shown in the figure, consult Chapter 10, "FULL Command," for recovery procedures.

8. *COMMAND?* FULL)

   FULL INIT DESTROYS ALL PREVIOUS DISKETTE STRUCTURE.
   DOS INIT/F MUST BE ISSUED AFTER FULL INIT.
   DO YOU REALLY WANT A FULL INIT? (YES OR NO)

   a. Type: YES)

   b. *NUMBER OF PATTERNS TO RUN (1-5)?* 5) (Questions b through f are not asked for single-density diskettes.)

      ****PATTERN # 1 (125252)****
      ****PATTERN # 2 (052525)****
      ****PATTERN # 3 (155555)****
      ****PATTERN # 4 (000000)****
      ****PATTERN # 5 (177777)****

      ****ALL PATTERNS RUN****

      DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT
      ARE NOT ALREADY IN THE BAD BLOCK TABLE?

   c. Type: NO)

      DEFAULT REMAP AREA IS 12 BLOCKS LONG
      IT NEEDS TO BE AT LEAST n BLOCKS LONG
      REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?)

   d. Type:)

      REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?)

Figure 5-1. Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (NOVA)

Licensed Material-Property of Data General Corporation

e. Type:)

DEFAULT FRAME SIZE IS nn
MIN IS 1 AND MAX IS mm
DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

f. Type:)

FULL INIT COMPLETE

COMMAND?

g. Type: COPY)

COPY DISK(ETTE) IS ON DRIVE xx
NOW TELL ME ABOUT THE ORIGINAL DISK(ETTE)
DISK DRIVE MODEL NUMBER?

h. Type:

6097) (double-density)
6030) (single-density)

DISK UNIT?

i. Type: DP0)

I AM ABOUT TO COPY XX0 to XX1 IS THIS CORRECT?
ANSWER (YES) TO CONTINUE (NO) TO STOP

j. Type: YES)

DOSINIT now copies the DG STARTER diskette, which takes a few moments. Then it says:

I HAVE FINISHED MAKING YOUR COPY
ANOTHER COPY?

k. Type: NO)

COMMAND?

l. Remove the DG STARTER diskette from drive 0, replace it in the envelope, and store it safely. Take your labeled MY STARTER DISKETTE from the other drive (drive 1), insert it in drive 0, and close the door to drive 0.

Take the blank diskette which you labeled MY SYSTEM DISKETTE, insert it in drive 1, and close the door to drive 1.

m. Type: FULL)

FULL INIT DESTROYS ALL PREVIOUS...
DOS INIT/F MUST BE DONE...
DO YOU REALLY WANT A FULL INIT (YES OR NO)?

n. Type: YES)

NUMBER OF PATTERNS TO RUN (1-5)?

(Questions o through s are not asked for single-density diskettes.)

Figure 5-1. Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (NOVA) (continued)

Licensed Material-Property of Data General Corporation

o. Type: 5)

****PATTERN # 1 (125252)****

(DOSINIT runs patterns.)

DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT
ARE NOT ALREADY IN THE BAD BLOCK TABLE?

p. Type: NO)

DEFAULT REMAP AREA IS 12 BLOCKS LONG
IT NEEDS TO BE AT LEAST yy BLOCKS LONG
REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?

q. Type:)

REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?

r. Type:)

DEFAULT FRAME SIZE IN nn
MIN IS 1 AND MAX IS mm
DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?

s. Type:)

FULL INIT COMPLETE
* *COMMAND?*

t. Type: STOP)

Figure 5-1. Using DOSINIT to Copy the DG Diskette and Initialize Another Diskette (NOVA) (continued)

Installing the Bootstrap Root

Next, you'll want to put the disk bootstrap root on your diskettes. Later, this will allow you to start up your DOS system from any of these diskettes. MY SYSTEM DISKETTE should still be in drive 1.

9. Program load your computer.

   a. With a programmed console, type 100033L, on the system console. Go to the next step.
   b. With hardware data switches and auto program load, lift the RESET switch, then the PROGRAM LOAD switch. Go on to the next step.
   c. Without auto program load, execute full step 3c described earlier.

10. This brings BOOT.SV into memory again; it asks for the filename of the program you want:

    FILENAME?

    Type BOOT, the filename of the bootstrap root installer.

    BOOT)

11. This loads the installer portion of BOOT.SV. BOOT asks:

    BOOTSTRAP DEVICE SPECIFIER?

    Respond with:

    DP1)

    for the diskette in DP1.

12. BOOT then asks:

    INSTALL BOOTSTRAP (Y OR N)?

    Type:

    Y

    This writes the bootstrap root on the diskette, and BOOT says:

    DONE.
    BOOTSTRAP DEVICE SPECIFIER?

Licensed Material-Property of Data General Corporation

Bringing Up the DOS Starter System

At this point, you're ready to bring up the DOS starter system. Your MY SYSTEM DISKETTE should still be in drive 1.

13. Force BOOT to ask FILENAME? by typing:

    DP0)

    INSTALL BOOTSTRAP (Y OR N)?

14. Type:

    N

15. BOOT now asks:

    FILENAME?

    Respond with a diskette specifier and the starter system name, BOOTSYS:

    DP0:BOOTSYS)

    BOOT now loads the starter system into the computer. This takes a few moments. The starter system announces itself and asks for the date:

    NOVA DOS REV x.xx

    DATE (M/D/Y)?

16. Enter the current date, in the format "month date year"; for example:

    1 16 79)

    Next, it asks for the time:

    TIME (H:M:S)?

17. Type in the time, in the format "hours-in-24 minutes seconds". The seconds entry is optional. For example:

    15 05)

    BOOTSYS now proceeds to invoke the Command Line Interpreter (CLI). When the CLI types its prompt letter:

    R

    BOOTSYS is running from DP0.

18. MY SYSTEM DISKETTE should still be in DP1. Make this disk available to DOS by typing:

    INIT/F DP1)
    R

    INIT/F writes a new file directory to the diskette. You must use this after running the DOSINIT FULL command on a diskette, but you should never use it on a diskette which holds valuable data because it effectively destroys all files on the diskette.

19. For a double-density system, go to step 20. For a single-density system, type

    MLM)

    This executes a CLI macro file (MLM.MC) that sets up DP1 with links for system generation. Wait for the R prompt.

20. At this point, you're done with the preparation procedure. If you want to generate a tailored system now, go to Chapter 6.

    If you want to rest for a while, type:

    RELEASE DP0)

    This terminates DOS operations. DOS displays a sign-off message:

    MASTER DEVICE RELEASED

    and halts. Later, you'll need to bring BOOTSYS up again to generate your tailored system. You'll use the normal program-load sequence, covered at the beginning of Chapter 6.

Figure 5-2 summarizes the steps you take to run DOSINIT, install a bootstrap root, and install the starter system on diskette. When you have a DOS system running, you need not execute all these steps to ready a diskette; instead, you can use the CLI command BOOT DOSINIT) to run DOSINIT or BOOT BOOT) to install a bootstrap root.

Licensed Material-Property of Data General Corporation

Execute preliminary steps (power up devices) in Chapter 1.

1. Tape write-protect hole on two blank Data General diskettes; with a felt-tipped pen, write MY STARTER DISKETTE on one of these, and MY SYSTEM DISKETTE on the other.

2. a. Get the DG-supplied microNOVA DOS diskette (microNOVA STARTER diskette for single density) and insert it in drive 0; close the door.
   b. Insert your labeled blank MY STARTER DISKETTE in drive 1; close the door.

3. Program load your computer:

   a. With programmed console, type 100033L on the *system* console; go to step 4.
   b. With a hand-held console, press RESET, CLR D, enter set the data switches to 100033 octal (switches 0, 11, 12, 14 and 15 up, the rest down). Lift the RESET switch, then the PROGRAM LOAD switch. Go to step 4.
   c. With hardware data switches but without auto program load, execute full step 3c described earlier.

4. *FILENAME?*

5. DOSINIT)

6. *DOSINIT REV x.xx*
   DISK DRIVE MODEL NUMBER? 6097) (6030) for single density)

7. *DISK UNIT?* DP1)

8. *COMMAND?* FULL)

   a. *COMMAND DESTROYS ANY PREVIOUS...*
      DO YOU REALLY WANT A FULL INIT? (YES OR NO) YES)

   b. *NUMBER OF PATTERNS TO RUN (1-5)?* 5) (8b-8f skipped for single density)

      **** PATTERN NUMBER 1 (125252) ****
      **** PATTERN NUMBER 2 (052525) ****

      .

      (DOSINIT runs patterns)

      .

      **** ALL PATTERNS RUN ****

   c. *DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE?* NO)

   d. *DEFAULT REMAP SIZE IS 12 BLOCKS LONG*
      IT NEEDS TO BE AT LEAST n BLOCKS LONG
      REMAP AREA SIZE (TYPE RETURN FOR DEFAULT))

   e. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?*)

   f. *DEFAULT FRAME SIZE IN nn*
      MIN IS 1 AND MAX IS mm
      DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

      FULL INIT COMPLETE

   g. *COMMAND?* COPY)

Figure 5-2. Preparing for First SYSGEN on a Diskette-Based NOVA Configuration

Licensed Material-Property of Data General Corporation

h. *COPY DISKETTE IS ON DRIVE xx1*
NOW TELL ME ABOUT THE ORIGINAL DISKETTE
DISK DRIVE MODEL NUMBER? 6097↵ (6030↵ for single density)

i. *DISK UNIT?* DP0↵

j. *I AM ABOUT TO COPY xx0 to xx1. IS THIS CORRECT?*
ANSWER (YES) TO CONTINUE (NO) TO STOP YES↵

(pause)

k. *I HAVE FINISHED MAKING YOUR COPY*
ANOTHER COPY? NO↵

COMMAND?

l. Remove the DG original diskette from drive 0; replace in envelope and store safely. Take copy from drive 1, insert in drive 0; close door.

Insert MY SYSTEM DISKETTE from step 1 in drive 1.

m. FULL↵

n. *FULL INIT DESTROYS...*
DO YOU REALLY WANT A FULL INIT (YES OR NO) YES↵

o. *NUMBER OF PATTERNS TO RUN (1-5)?* 5↵ (8o through 8s skipped for single density)

**** PATTERN NUMBER 1 (125252) ****

(patterns run)

p. *DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT*
ARE NOT ALREADY IN THE BAD BLOCK TABLE? NO↵

q. *DEFAULT REMAP AREA IS 12 BLOCKS LONG*
...REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)? ↵

r. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?* ↵

s. *DEFAULT FRAME SIZE IS nn*
...DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)? ↵

t. *FULL INIT COMPLETE*
COMMAND? STOP↵

9. Program load your computer:
   a. With hand-held console, type 100033L on system console; go to next step.
   b. With hardware data switches and APL, lift the RESET switch, then the PROGRAM LOAD switch; go to next step.
   c. With hardware data switches but without APL, executes full step 3c described earlier.

10. *FILENAME?* BOOT↵

11. *BOOT REV x.xx*
BOOTSTRAP DEVICE SPECIFIER? DP1↵

Figure 5-2. Preparing for First SYSGEN on a Diskette-Based NOVA Configuration (continued)

Licensed Material-Property of Data General Corporation

12. *INSTALL BOOTSTRAP (Y OR N)* Y

    DONE.
    BOOTSTRAP DEVICE SPECIFIER?

13. DP0)

14. *INSTALL BOOTSTRAP (Y OR N)* N

15. *FILENAME?* DP0:MBOOTSYS)
    (pause)

16. *DOS REV x.xx*
    DATE (M/D/Y)? 1 16 79) (enter current date)

17. *TIME (H:M:S)?* 15 05) (current time in 24-hour format)

    R

18. INIT/F DP1)

19. For double density, go to step 20. For single density, type:

    MLM)
    (pause)
    R

20. Continue to Chapter 6 or type RELEASE DP0)

Figure 5-2. Preparing the First SYSGEN on a Diskette-Based NOVA Configuration (continued)

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 6
Generating a Tailored DOS System

Your next task is to generate a tailored DOS system.

If the DOS starter system is running, skip to the next section. If the starter system is not running, bring it up by executing step 3 in the chapter you just read.

When BOOT asks *FILENAME?*, answer MBOOTSYS) (for microNOVA), or BOOTSYS) (for NOVA). Then type in the date and time.

Multiplexors

SYSGEN asks questions about QTY, ALM, and ULM multiplexors. If you specify one of these, it then asks questions about line speed and interrupt characters. For your first system, you can default these. Later, if you decide on special characteristics for your multiplexed lines, read the section on multiplexors in Chapter 2 on the *DOS Reference Manual* or the Release Notice supplied with your software.

If you want the new DOS system to support Business BASIC, *do not* specify a multiplexor to SYSGEN. Business BASIC has its own multiplexor driver. For Extended BASIC, *do* specify a multiplexor to SYSGEN if you want the new system to support a multiplexor.

SYSGEN Command

To invoke the SYSGEN program, type:

SYSGEN □ SYS.SV/S □ SYS.SG/V □ SYS.LM/L)

This command instructs SYSGEN to generate a new system under filename SYS.SV, and an overlay file under SYS.OL. SYSGEN will store the dialog file, which is your record of SYSGEN dialog, under filename SYS.SG, and the load map file, which you can use to patch the system, under SYS.LM. SYSGEN will place all these files on the current disk. DE0, DH0, or DP0 for hard-disk or double-density diskette systems, DP1 for single-density systems. (For single-density systems, the system files must be on DP1 because there isn't room on DP0 for them.)

You can choose any unique filename instead of SYS, perhaps one that identifies the new system; for example, SMALLSYS. Note that SYS is the default name for disk bootstrapping, and naming your system SYS can make starting it up easier. Generally, you should not give a new system the name of an existing system; if you do, the old system will be deleted and replaced by the new one.

SYSGEN Dialog

After your SYSGEN command, program SYSGEN.SV starts executing and, after a brief pause, it asks you questions about your hardware configuration and the software features you want. Some answers will be obvious, others less obvious, but we recommend general answers to the the less obvious questions. If you are unsure whether a device is primary or secondary, then specify primary (0).

All of your answers to SYSGEN are numeric and in decimal, unless noted otherwise. If you default any answer by typing only), SYSGEN takes this as a 0 answer. Although bullets (•) identify the SYSGEN questions below, no bullets appear on your system console.

If you change your mind about the features you want, type CONTROL-A (hold down CTRL key, then press A). This interrupts SYSGEN and gives you the CLI R prompt, so you can give the SYSGEN command again.

SYSGEN first says:

DOS SYSGEN REV 3.xx
VALID ANSWERS ARE IN PARENTHESES
RESPOND ACCORDINGLY

Licensed Material-Property of Data General Corporation

- *CORE STORAGE (IN THOUSANDS OF WORDS 16-32)?*

  Type in the amount of memory your computer has in multiples of 1,024 words. For example, if your system has 28,672 words, type in 28). If it has 32K words, type in 32).

  You can generate a system for more memory than your current system has, but you cannot run such a system on your current computer.

- *IS THE SYSTEM FOR A MICRONOVA (0=NO 1=YES)?*

  To generate a microNOVA DOS system, answer 1); for a NOVA system, answer 0). If you specify a NOVA system, SYSGEN skips the next four questions.

- *PROCESSOR TYPE (MP/100 = ("0") MP/200=("1") OTHER =("2")?*

  The MP 100 and MP 200 computers are newer models of microNOVA and have programmed consoles. The older models (e.g., MN 601) have either a hand-held console, console debug, or CPU program load option.

  Respond with 0) if the new system is for a microNOVA MP 100, 1) for an MP 200 or 2) for a microNOVA that is not an MP 100 or MP 200.

  Next, for a microNOVA system with 32K of storage, SYSGEN wants to know:

- *HAND HELD CONSOLE OR CONSOLE DEBUG PRESENT IN SYSTEM (0=NO 1=YES)?*

  If you want the new system to support either of these microNOVA features, respond 1). Otherwise, answer 0). (For a 32K microNOVA system with either option, SYSGEN moves the system down to avoid the ROM memory used by the option.)

  If you answered 1) to the last question or have less the 32K, SYSGEN asks:

- *USE STANDARD HAND HELD CONSOLE FUNCTIONS (0=NO 1=YES)?*

  If you have a hand-held console, answer 1) to specify the DG interface between the console and the system. If you lack a hand-held console, or want to program the hand-held console via your own interrupt handler (defined with IDEF), then answer 0).

  For NOVA systems, SYSGEN now skips the next two questions.

- *NUMBER OF 6038 DISKETTE ENCLOSURES (0-4)?*

  This applies to single-density diskettes only. Answer with the number of single-density diskette enclosures you want the new system to support. Each microNOVA enclosure can have one or two drives. The first enclosure has drive DP0 and, if it has a second drive, DP1. This enclosure has device code 33 octal. The second enclosure, on device code 73 octal, has drive DP2 and, if it has a second drive, DP3. The third enclosure, on device code 30, has DP4 and, if it has a second drive, DP5. The fourth enclosure, on code 70, has drive DP6 and, if it has a second drive, DP7.

  Answer 1) only if you want the new system to support single-density diskettes. If you answer 0), SYSGEN skips all the way to the NUMBER OF 6095 CONTROLLERS question.

  If you specify one or more enclosures, SYSGEN asks how many drives each has:

- *NUMBER OF DRIVES FOR ENCLOSURE # 1 (1-2)?*

  Respond with the number of drives in the first enclosure. If this system will run your current equipment, you must type at least 1).

  If you specify more than one enclosure, SYSGEN asks this question for the second and each subsequent enclosure. SYSGEN now skips the next four questions.

- *NUMBER OF DISK CONTROLLERS (1-2)*

  SYSGEN asks this question and the next two for NOVA systems only. Each controller can handle up to four disk or diskette drives (any density) in any combination. (Each sealed disk, dual-platter disk subsystem, or diskette slot, is one drive.)

Licensed Material-Property of Data General Corporation

The primary controller, which you've been using up to now, is on device code 33 octal, and it can handle drives DP0, DP1, DP2, and DP3. If any of the drives is a hard disk, the fixed platter is DP0F, DP1F, DP2F, and/or DP3F.

Answer with the number of CONTROLLERS (not drives) you want the new system to support. You must type at least 1). If you answer 1), SYSGEN asks:

- *DEVICE PRIMARY ("0") OR SECONDARY ("1")?*

  Answer 0) to specify the first controller, on device code 33 octal, if you want the system to support your current equiment. This is the controller you've been using up to this point.

- *NUMBER OF DRIVES FOR CONTROLLER # 1* (1-4)?

  Respond with the number of drives connected to the first controller. The controller treats each diskette drive (slot), each sealed disk, and each dual-platter disk subsystem as one drive.

  If you want the new system to support only one diskette or hard-disk drive, type 1).

- *ARE ANY 6045 TYPE (0=NO 1=YES)?*

  If the new system will support a model 6045 dual-platter disk on this controller, answer 1); otherwise, answer 0). A 1) answer will enable the new system to access the fixed platter in the subsytem.

- *ARE ANY 6030 TYPE? ("0" = NO "1" = YES)*

  If the new system will support model 6030 single-density diskettes on this controller, answer 1). If no single-density diskettes will be connected to this controller, answer 0).

  If you specified two DISK CONTROLLERS earlier, SYSGEN now asks *NUMBER OF DRIVES FOR CONTROLLER # 2* and *ARE ANY 6045 TYPE* and *ARE ANY 6030 TYPE* disks for the second controller. Answer with the number of drives connected to the second controller, then specify whether any are 6045 or 6030 disks.

  Next, if the new system might support diskettes, SYSGEN asks:

- *SOFT ERROR REPORTING (0=NO 1=YES)?*

  Soft error reporting pertains to diskettes only; thus you should consider answering 1) only if you plan to run diskettes on your system. If you select this feature, DOS will monitor soft errors on each diskette, will note all errors in an error table on diskette, and will report each error to the console. DOS requires an extra stack (described later) to record and report errors. IF YOU OMIT THIS FEATURE, DOS WILL IGNORE ALL SOFT ERRORS ON DISKETTES. If the new system will run diskettes, we recommend that you answer 1) (unless your memory requirements are very critical). Soft errors are described in the "Diskette Considerations" appendix of the *DOS Reference Manaul.*

- *NUMBER OF 6095 DISK CONTROLLERS (0-2)?*

  SYSGEN asks this question and the next four for microNOVA systems only. Each microNOVA 6095 disk controller runs one dual-platter disk subsystem. Answer 1) if you want the new system to support a 6095 subsystem, whose primary disk names are DH0 and DH0F. (This question doesn't pertain to sealed single-platter disks, which SYSGEN asks about next.)

  If you answer 0), SYSGEN skips the next question. If you answer 1), it wants to know:

- *DEVICE PRIMARY ("0") OR SECONDARY ("1")?*

  The primary controller supports disks DH0 and DH0F, and its device code is 27 octal. If you want the new system to support your current equipment, answer 1). If you want it to support a dual-platter subsystem on the second controller *only* (device code 67 octal), type 1).

Licensed Material-Property of Data General Corporation

- *NUMBER OF 6096/6102 DISK CONTROLLERS (0-2)?*

  A 6096/6102 disk controller can support one sealed single-platter disk and up to three double-density drives; or it can support up to four double-density drives without a hard disk. If you have been using double-density diskettes at all, and you want the new system to support your current equipment, you must answer at least 1).

  If you specify 1 (not 0 or 2) 6096 controller, SYSGEN asks:

- *DEVICE PRIMARY ("0") OR SECONDARY ("1")?*

  If your sealed disk (or diskettes) is one device code 26 octal, you must answer 0) to support your current equipment. If you want the new system to support a sealed disk and/or diskettes on the second controller *only* (device code 66 octal), answer 1).

  If you answer 0), SYSGEN ASKS:

- *NUMBER OF DRIVES FOR CONTROLLER # 1 (1-4)?*

  Each sealed disk or diskette slot counts as one drive. The drive names for the first controller are DE0, DE1, DE2, and DE3, and the device code is 26 octal.

  If you have a sealed hard d and want the new system to support your curre hardware, you must answer at least 1). Answer 2) or 3) if you moved the DRIVE 0 SELECT toggle switch in the pre-SYSGEN chapter.

  For diskette-only systems, you must answer at least 2) to have the system support your equipment.

  If you specified two 6096 controllers above, SYSGEN needs to know about the drives on the second controller:

- *NUMBER OF DRIVES FOR CONTROLLER # 2 (1-4)?*

  The second 6096 controller can support the same kinds of drives as the first, but the drive names are DE4, DE5, DE6, and DE7. Answer with the number of drives on the second controller (in most cases, 1)). If you answer 1), the new system will support DE4.

- *ENTER BAD BLOCK POOL SIZE IN BLOCKS (0-512)?*

  DOS needs a bad block pool in memory to pass over unusable disk(ette) storage (unless it is running single-density diskettes only). The bad block pool must be large enough to hold the bad blocks for all disks on your system; e.g., if you have two disks, and each has four bad blocks, the bad block pool size must be at least eight if both disks will be initialized at the same time. When you ran DOSINIT and defaulted the REMAP AREA SIZE question, it set up an area of 12 blocks on the disk.

  To match the remap area for one disk, answer 12) to reserve space in memory for 12 bad blocks when the new system runs. If DOSINIT finds bad blocks, or if your system will run more than three disks simultaneously, multiply the number of disks by 12 and type the product in. For example, if the system will run four disks, type 4*12 or 48).

- *ENTER NUMBER OF STACKS (1-10)*

  DOS uses a stack to handle disk accesses and system calls; the number you specify determines how many devices and system/tasks operations DOS can run concurrently. Each system call issued by a user program requires a stack; a task call does not. If you plan to write multitask programs and have each task issue system calls, each task will need a stack if tasks are to run concurrently. If a task issues a system call and no stack is free, the task must wait until one is free.

  One stack is the minimum (two stacks if you specified soft error reporting on diskettes). Extended BASIC requires another stack; multiuser BASIC requires two additional stacks. For multitask applications, we recommend two stacks (three with soft error reporting on diskette); for single-task applications, one stack (two with diskettes). DOS automatically allots two extra system buffers for the fourth and each additional stack.

Licensed Material-Property of Data General Corporation

- *ENTER NUMBER OF EXTRA BUFFERS REQUIRED (0-32)*

  DOS allots a minimum of six buffers, or two buffers per stack, whichever is greater. Extra buffers speed up the system by allowing disk data to remain in memory instead of being swapped out to disk. Each extra buffer takes an additional 270 words and reduces the amount of memory available for your programs by that much.

  Block I/O operations (records read from, or written to disk in multiples of 256 words) do not require buffers. If you are unsure of how many extra buffers to specify, we suggest:

Memory size:	For disk-based DOS, type:	For diskette-based DOS, type:
16K	0)	0)
28K	2)	4)
32K	4)	6)

- *MAXIMUM NUMBER OF SUB-DIRECTORIES ACCESSIBLE AT ONE TIME (0-32)?*

  Each disk or diskette (like DH0 or DP1) is a directory; you can also create and use smaller directories within each. For this question, each smaller directory is called a subdirectory. You can address each subdirectory through the CLI or your programs as if it were a self-contained disk. The utility programs (assemblers, editors, etc.) do not need subdirectories.

  DOS will not allow more than the number of subdirectories you specify here to be initialized at any moment, but you can always RELEASE one subdirectory to initialize another. Depending on the number of categories you will need for your disk files, good general answers range between 6 and 16.

- *ENTER NUMBER OF MAG TAPE DRIVES (0-8)*

  For microNOVA systems, type 0). For NOVA systems, answer 1) only if you want the new system to support magnetic tape; otherwise answer 0). The magnetic tape controller, which can run up to eight drives, is on device code 22 octal. The drives have DOS names MT0 through MT7.

- *AUTO RESTART ON POWER FAIL (0=NO 1=YES)*

  For microNOVA systems, if you have this hardware option and a back-up battery, answer 1). Otherwise, answer 0).

  For NOVA systems, if you want this option, answer 1). If your computer has semiconductor memory, you need a back-up battery for the option to work.

- *RTC? ("0"=NO "1"=YES)*

  Type 1).

- *RTC PRIMARY ("0") SECONDARY ("1") OR INTERNAL ("2")?*

  The microNOVA MP 200 has an external clock, so if the new system is for an MP 200, answer 0). SYSGEN then skips the next question. Most microNOVAs that are not MP 200s have an internal clock, but an external clock is available as an option. In most cases, for a microNOVA that is not an MP 200, answer 2); but if you ordered an external clock for your microNOVA and want the new system to support the external clock, answer 1).

  For NOVA systems, you must specify either 0) or 1). The primary clock has device code 14 octal and the secondary clock has device code 54 octal. Generally, your clock will be primary, so answer 0).

  For all systems except an MP 100 microNOVA with an internal clock, SYSGEN skips the next question.

- *ENTER RTC FREQ (1=STANDARD 2=50HZ 3=60HZ)?*

  The standard frequency for an MP 100 internal clock is 509Hz; Extended BASIC expects this frequency. In most cases, you will want it, so answer 1). To synchronize with 60Hz power, type 3); to synchronize with 50Hz power, type 2). SYSGEN now skips the next question.

- *ENTER RTC FREQ (1=10HZ, 2=50HZ, 3=60HZ, 4=100HZ, 5=1000HZ)*

  Unless you want a special frequency for programs you code yourself, answer 1) for a 10-Hz clock. Extended BASIC expects either 10-Hz or the microNOVA internal clock frequency. To synchronize with 50-Hz A.C. power, type 2); to synchronize with 60-Hz power, type 3).

Licensed Material-Property of Data General Corporation

- *PAPER TAPE READER (0=NO 1=YES)?*

  If you specify a paper tape reader, it has device code 12 octal and DOS filename $PTR.

- *PAPER TAPE PUNCH (0=NO 1=YES)?*

  For microNOVA systems, type 0).

  For NOVA systems, type 1) if you want the new system to support a paper tape punch. The paper tape punch has device code 13 octal and DOS filename $PTP.

- *ENTER NUMBER OF LPT (0-2)*

  The first line printer has device code 17 octal and DOS filename $LPT; the second printer has code 57 octal and filename $LPT1. If you have one or two printers, SYSGEN asks for one or both of the following questions, respectively:

- *ENTER COLUMN SIZE FOR DEVICE # 1 (80 OR 132)*

- *ENTER COLUMN SIZE FOR DEVICE #* 2 (80 OR 132)

  Answer with the column width of your line printer (80) or 132)).

  Next, SYSGEN asks:

- *CARD READER (0=NO 1=YES)?*

  For microNOVA systems, type 0). For NOVA systems, type 1) if you want the new system to support a punched or mark-sense card reader. The reader has device code 16 octal and DOS filename $CDR.

- *PLOTTER (0=NO 1=YES)?*

  For microNOVA systems, type 0). For NOVA systems, type 1) if you want the DOS system to support an incremental plotter. The plotter has device code 15 octal and DOS filename $PLT.

- *QTY (0=NO 1=YES)?*

  Answer 0) for an ALM or ULM multiplexor or no multiplexor; SYSGEN will then skip the next six questions.

  For microNOVA systems, answer 1) if you want to configure one or more type 4207 asynchronous interface boards as a multiplexor.

  For NOVA systems, answer 1) if you have a model 6040 multiplexor. The multiplexed lines will have filenames QTY:0 through QTY:3 (or QTY:7) when the DOS system runs. For NOVA systems, SYSGEN skips the next three questions.

- *ENTER NUMBER OF ASYNCHRONOUS INTERFACE BOARDS TO BE USED AS A MULTIPLEXOR (1-8)*

  Reply with the number of microNOVA boards you wish to use as a multiplexor. Each board provides one full-duplex line. The system console, $TTO/$TTI, cannot be included in the configured multiplexor. You can include the interface for $TTO1/$TTI1 in the multiplexor if you don't specify it later in SYSGEN (SECOND TTY? question).

SYSGEN now asks about the octal device codes associated with each board's receive and transmit function:

- *ENTER DEVICE CODES (OCTAL) FOR EACH LINE (1-76): LINE # 0 RECEIVE?*

  Enter the jumper-selected device code of the line 0 receiver (see *microNOVA Computer Systems Technical Reference Manual* for more on jumper selection).

  LINE # 0 TRANSMIT?

  Enter the device code of the line 0 transmitter.

  SYSGEN repeats the previous two questions for each board you specified as a multiplexor. It cannot check for conflicts with other I/O device codes. DOS will report any conflicts when you bootstrap the new system. The lines you specify in these questions will have filenames QTY:0 through QTY:7 when the new system runs.

Licensed Material-Property of Data General Corporation

Now SYSGEN wants to know about the interrupt characters for your QTY lines:

- *USE DEFAULT QTY/ALM INTERRUPT CHARACTERS (0=NO 1=YES)*

  The default interrupt characters for mux lines are CTRL-A and CTRL-C. If you want users of your lines to use these characters for interrupts, type 1); otherwise type 0). If you type 0), SYSGEN asks the next two questions:

- *FIRST CHARACTER (ASCII DECIMAL CODE OR 128=NONE)?*

  Enter the interrupt character you want used instead of CTRL-A in the decimal version of ASCII (e.g., 27 for ESC), or enter 128 to omit a first interrupt character.

- *SECOND CHARACTER (ASCII DECIMAL CODE OR 128=NONE)?*

  Enter the interrupt character you want used instead of CTRL-C, in decimal ASCII, or enter 0 to omit a second interrupt character. SYSGEN now skips all the way to the COLUMN SIZE FOR $TTO question.

- *ALM ?(0=NO 1=YES)*

  If you want the new system to support an Asynchronous Line Multiplexor (ALM), answer 1). If not, answer 0). If you specify an ALM, SYSGEN will use file ALMSPD.RB to set line characteristics for the ALM lines. For future systems, you can specify your own line characteristics by editing file ALMSPD.SR (using a text editor), then assembling ALMSPD.SR with the Macroassembler. The assembly produces a new ALMSPD.RB, which future SYSGENs will use to implement the line characteristics you want.

  The ALM multiplexed lines will have DOS filenames QTY:0 through QTY:3 (or QTY:7) when the new system runs.

- *DEVICE PRIMARY (0) OR SECONDARY (1)?*

  If your ALM is attached to device code 34 octal, answer 0); if it is attached to device code 44 octal, answer 1).

- *ALM CLOCK FREQUENCY? (0-3)*

  The default frequency of the ALM clock is 0; you can specify either 0, 1, 2, or 3. This determines which clock will be used for DEFAULT by the device driver.

- *USE DEFAULT QTY/ALM INTERRUPT CHARACTERS (0=NO 1=YES)*

  The default interrupt characters for mux lines are CTRL-A and CTRL-C. If you want users of your lines to use these characters for interrupts, type 1); otherwise type 0), SYSGEN asks the next two questions:

- *FIRST CHARACTER (ASCII DECIMAL CODE OR 128=NONE)?*

  Enter the interrupt character you want used instead of CTRL-A, in the decimal version of ASCII (e.g., 27) for ESC), or enter 128) to omit a first interrupt character.

- *SECOND CHARACTER (ASCII DECIMAL CODE OR 128=NONE)?*

  Enter the interrupt character you want used instead of CTRL-C, or enter 128) for no second interrupt character. This question ends the multiplexor series.

- *COLUMN SIZE FOR $TTO (80 OR 132)?*

  If you have a DASHER™ or other 132-character system console, answer 132); otherwise, answer 80).

- *SECOND TTY (0=NO 1=YES)?*

  Answer 1) if you have a console connected to the second teletypewriter interface. This has device code 50 octal and filename $TT11 for input, and code 51 octal and filename $TTO1 for output. If you answer 1), SYSGEN asks about the column size of the second console:

- *COLUMN SIZE FOR $TTO1 (80 OR 132)?*

  Respond with 132) if the second console is a 132-column device; otherwise answer 80).

- *CORE DUMP FACILITY (0=NO 1=YES)?*

  If the system comes down unexpectedly, the core dump program can copy memory to diskette or to the line printer. This can help identify the problem. You can also invoke the dump program yourself, as described in the "Exceptional Status" appendix of the *DOS Reference Manual.* The core dump feature requires about 300 memory locations when you run this DOS system.

Licensed Material-Property of Data General Corporation

The core dump question is the last in the SYSGEN dialog. SYSGEN now selects the modules for the new system from the SYSGEN libraries and tells the Relocatable Loader to create the new system. The whole process takes several minutes for hard-disk DOS and about 15 minutes for diskette-based DOS. Don't be alarmed at the delay. Soon, control will return to the CLI, which issues the prompt:

```
R
```

Your new system has been built. The next step depends on the kind of hardware you have. For sample SYSGEN dialogs, see Figures 6-1 through 6-4. These figures show sample SYSGEN for microNOVA hard disk, NOVA hard disk, microNOVA diskette, and NOVA diskette.

If you have a hard-disk or double density diskette system, continue to the next section; for single-density diskette-based DOS, skip to the section, "Testing Your New System - Single-Density Diskettes".

Testing Your New System - Hard Disks and Double-Density Diskettes

The new system is stored on DH0 or DE0 (microNOVA) or DP0 (NOVA) under the names SYS.SV and SYS.OL (or sysname.SV and sysname.OL if you sepcified a different sysname in the SYSGEN command).

To test the new system, type:

```
BOOT SYS)        (or sysname instead of SYS)
```

MASTER DEVICE RELEASED

type DOS REV x.xx (type is microNOVA or NOVA)
DATE (M/D/Y)?

As you have done before, provide the date and time:

```
DATE (M/D/Y)? 1 16 79)
TIME (H:M:S)? 15 55)
R
```

The R prompt means that your tailored DOS is running. Skip to "The Next Steps", below. (If you receive an error message or if you don't receive the R prompt, bring up the starter system again as described in the beginning of this chapter. Type:

```
DELETE SYS.(SG,LM))
```

then run through the SYSGEN sequence again. Use the same sysname to delete the defective system files.

Testing Your New System - Single-Density Diskettes

Before you can test your diskette-based system, you must give the diskette which holds it a CLI, DOSINIT.SV, and BOOT.SV. Type:

```
MOVE/V□DP1□CLI.OL□CLI.SV□CLI.ER□↑)
  BOOT.SV□DOSINIT.SV)
CLI.OL
      .
      . (CLI verifies files copied to DP1.)
      .
R
```

(MOVE or LOAD commands from diskette take awhile to execute, so don't be alarmed at the delay.)

Now you're ready to start up your tailored system. Type:

```
BOOT DP1:SYS)    (or sysname instead of SYS)
MASTER DEVICE RELEASED
DOS REV x.xx
DATE (M/D/Y)?
```

As you have done before, provide the date and time:

```
DATE (M/D/Y)? 1 16 79)
TIME (H:M:S)? 15 55)
R
```

The R prompt means that your tailored DOS is running. (If you receive an error message, or don't receive the R prompt, type DELETE SYS.SG SYS.LM). Then bring up the starter system again via steps 3 and 15. Run through the SYSGEN command again, using the same sysname to delete the defective system files.)

With your tailored DOS running, remove the links that the MLM macro set up by typing:

```
UNLINK -.-)
R
```

Next, move the relocatable loader files from MY STARTER DISKETTE onto the tailored system diskette via the following commands:

```
DIR DP0)
R
MOVE/V DP1□RLDR.OL□RLDR.SV)
RLDR.OL
RLDR.SV
R
RELEASE DP0)
R
```


Licensed Material-Property of Data General Corporation

Remove MY STARTER DISKETTE from DP0 and store it safely. This diskette has the starter system, SYSGEN.SV, the SYSGEN libraries, and a bootstrap mechanism on it, and you'll use it for future SYSGENs.

Note that you cannot bootstrap DOS from a write-protected diskette, so you may want to leave the tape on MY STARTER DISKETTE. If you remove the tape, replace it before you use the diskette again. There are two reasons for this. First, it allows you to bootstrap from the diskette; second, any files MOVEd or copied (COPY) from a write-protected diskette automatically receive attributes APW. This means that when you MOVE or COPY a file from a write-protected diskette, the copy cannot be deleted or modified in any way. This rule applies to MY STARTER DISKETTE and to all user diskettes. (You can copy a file from such a diskette without assigning APW via the XFER command.)

The Next Steps

If you have a line printer, you can now print a copy of the SYSGEN dialog. (If you have a hard-copy console, you already have this.) Type:

PRINT SYS.SG⟩ (or **sysname** for SYS)

The load map, which gives the addresses where system modules will execute, is also stored on disk or diskette, under SYS.LM. This file will allow you to apply patches (disk updates which DG may supply in the future) to your system; you should retain it until you have determined that you need not patch the system.

Congratulations! You've generated a tailored DOS system. If you are familiar with DOS, proceed to do whatever you want with the new system.

If this is your first SYSGEN, there are still a few things left to do. Before you proceed, RELEASE your tailored system. According to your hardware, type:

RELEASE DE0⟩ (microNOVA sealed disk or double-density diskette)

or

RELEASE DP0⟩ (all NOVA systems or microNOVA double-density diskettes)

or

RELEASE DH0⟩ (microNOVA disk cartridge)

DOS will release itself, display the message

MASTER DEVICE RELEASED

and shut down.

Now, if you have a disk-based system, proceed to Chapter 7, which explains some essential things about running DOS.

If you have a diskette-based system, go to Chapter 8, which, after explaining some DOS essentials, tells you how to optimize your system diskette, and, for a single-density system, how to load some DG utility programs.

How Much Memory Does DOS Use?

If your computer has limited memory, or if you want to create a system to run on a small computer, you may want to generate a DOS system that requires as little memory as possible. Table 6-1 shows each DOS feature and the amount of memory it requires when DOS runs. Take the skeletal DOS figure and add the amount for each feature you select at SYSGEN; the sum is the amount of memory this DOS system requires. On a microNOVA system with hand-held console or console debug, the ROM (Read-Only Memory) memory used by the option occupies the top 256 words of memory.

The numbers in the table may change; they were current when we printed this.

Another way to check the memory requirement of a DOS system is to examine symbol SMON in the load map listing. The octal value next to SMON is the lowest NREL address the system will use when it runs; almost all the space beneath it is available for user programs.

For example, assume the value next to SMON is 43332 (octal). In decimal, this is 18,138. Thus, in this DOS system, about 18,000 words of memory are available for user programs -- less about 300 locations for user I/O channels.

Licensed Material-Property of Data General Corporation

Table 6-1. DOS Rev. 3.20 Memory Requirements

Feature	Requirements in Words
Skeletal DOS, 6 buffers, 1 stack	
microNOVA	6,188
NOVA	6,187
Hand-held console	59
First microNOVA 6038 diskette controller	537
Each subsequent microNOVA 6038 diskette controller	33
Each 6038 diskette drive	33
First NOVA disk/diskette controller	443
Each subsequent NOVA disk/diskette controller	33
Each disk/diskette drive	33
Soft error reporting	301
First microNOVA 6095 disk controller	347
Second microNOVA 6095 disk controller	96
Each disk drive	33
First microNOVA 6096/6102 disk/diskette controller	454
Second microNOVA 6096/6102 disk/diskette controller	33

Feature	Requirements in Words
Each disk/diskette drive	33
Bad block remapping (used for hard disks)	71
Stacks, per stack	242
Extra buffers, each	270
Directories, each	33
Magnetic tape controller	484
Each tape drive	14
Auto restart	
microNOVA	180
NOVA	188
Real-time clock	0
Paper tape reader	103
Paper tape punch	94
Line printer (first)	82
Line printer (second)	69
QTY mux interface	
microNOVA Asynch. Bds.	796
NOVA (4060 mux)	754
ALM multiplexor	1,011
Second TTY	271
Core dump facility	
microNOVA	365
NOVA	353

```
DOS SYSGEN REV 3.20
VALID ANSWERS ARE IN PARENTHESES RESPOND ACCORDINGLY

CORE STORAGE IN THOUSANDS OF WORDS (16-32) $32
IS THE SYSTEM FOR A MICRONOVA? (0=NO 1=YES) $1
  PROCESSOR TYPE? (MP/100 ("0")  MP/200 ("1")  OTHER ("2")) $1
NUMBER OF 6038 DISKETTE ENCLOSURES (0-4) $1
  NUMBER OF DRIVES FOR ENCLOSURE #1(1-2) $1
  SOFT ERROR REPORTING? ("0"=NO "1"=YES) $0
NUMBER OF 6095 DISK CONTROLLERS (0-2) $0
NUMBER OF 6096/6102 DISK CONTROLLERS (0-2) $1
  DEVICE PRIMARY("0") OR SECONDARY("1")? $0
  NUMBER OF DRIVES FOR CONTROLLER #1(1-4) $1
ENTER BAD BLOCK POOL SIZE IN BLOCKS (0-512) $12
ENTER NUMBER OF STACKS (1-10) $3
ENTER NUMBER OF EXTRA BUFFERS REQUIRED (0-32) $4
MAXIMUM NUMBER OF SUB-DIRECTORIES ACCESSIBLE AT ONE TIME (0-32) $6
AUTO RESTART ON POWER FAIL? ("0"=NO "1"=YES) $0
RTC? ("0"=NO "1"=YES) $1
  RTC PRIMARY ("0")  SECONDARY ("1") OR INTERNAL ("2")? $0
    ENTER RTC FREQ (1=10HZ 2=50HZ 3=60HZ 4=100HZ 5=1000HZ) $1
PAPER TAPE READER? ("0"=NO "1"=YES) $0
PAPER TAPE PUNCH? ("0"=NO "1"=YES) $0
ENTER NUMBER OF LPT(0-2) $0
CARD READER? ("0"=NO "1"=YES) $0
PLOTTER? ("0"=NO "1"=YES) $0
QTY? ("0"=NO "1"=YES) $0
ALM? ("0"=NO "1"=YES) $0
COLUMN SIZE FOR $TTO (80 OR 132) $80
SECOND TTY? ("0"=NO "1"=YES) $0
CORE DUMP FACILITY? ("0"=NO  "1"=YES) $0
```

Figure 6-1. microNOVA Sealed Hard-Disk SYSGEN Dialog

Licensed Material-Property of Data General Corporation

```
DOS SYSGEN REV 3.20
VALID ANSWERS ARE IN PARENTHESES RESPOND ACCORDINGLY

CORE STORAGE IN THOUSANDS OF WORDS (16-32) $32
IS THE SYSTEM FOR A MICRONOVA? (0=NO 1=YES) $0
NUMBER OF DISK CONTROLLERS(1-2) $1
  DEVICE PRIMARY("0") OR SECONDARY("1")? $0
  NUMBER OF DRIVES FOR CONTROLLER #1(1-4) $2
    ARE ANY 6045 TYPE? ("0"=NO "1"=YES) $1
    ARE ANY 6030 TYPE? ("0"=NO "1"=YES) $1
  SOFT ERROR REPORTING? ("0"=NO "1"=YES) $0
ENTER BAD BLOCK POOL SIZE IN BLOCKS (0-512) $24
ENTER NUMBER OF STACKS (1-10) $3
ENTER NUMBER OF EXTRA BUFFERS REQUIRED (0-32) $4
MAXIMUM NUMBER OF SUB-DIRECTORIES ACCESSIBLE AT ONE TIME (0-32) $8
ENTER NUMBER OF MAG TAPE DRIVES (0-8) $0
AUTO RESTART ON POWER FAIL? ("0"=NO "1"=YES) $0
RTC? ("0"=NO "1"=YES) $1
  RTC PRIMARY ("0")  SECONDARY ("1") OR INTERNAL ("2")? $0
    ENTER RTC FREQ (1=10HZ 2=50HZ 3=60HZ 4=100HZ 5=1000HZ) $1
PAPER TAPE READER? ("0"=NO "1"=YES) $0
PAPER TAPE PUNCH? ("0"=NO "1"=YES) $0
ENTER NUMBER OF LPT(0-2) $0
CARD READER? ("0"=NO "1"=YES) $0
PLOTTER? ("0"=NO "1"=YES) $0
QTY? ("0"=NO "1"=YES) $0
ALM? ("0"=NO "1"=YES) $1
  DEVICE PRIMARY("0") OR SECONDARY("1")? $0
  ALM CLOCK FREQUENCY? (0-3) $0
  USE DEFAULT ALM/QTY INTERRUPT CHARACTERS? ("0"=NO "1"=YES) $1
COLUMN SIZE FOR $TTO (80 OR 132) $80
SECOND TTY? ("0"=NO "1"=YES) $0
CORE DUMP FACILITY? ("0"=NO  "1"=YES) $0
```

Figure 6-2. NOVA Hard-Disk Dual Platter Subsystem SYSGEN Dialog

Licensed Material-Property of Data General Corporation

```
DOS SYSGEN REV 3.20
VALID ANSWERS ARE IN PARENTHESES RESPOND ACCORDINGLY

CORE STORAGE IN THOUSANDS OF WORDS (16-32) $28
IS THE SYSTEM FOR A MICRONOVA? (0=NO 1=YES) $1
  PROCESSOR TYPE? (MP/100 ("0")  MP/200 ("1")  OTHER ("2")) $1
NUMBER OF 6038 DISKETTE ENCLOSURES (0-4) $1
  NUMBER OF DRIVES FOR ENCLOSURE #1(1-2) $2
  SOFT ERROR REPORTING? ("0"=NO "1"=YES) $1
NUMBER OF 6095 DISK CONTROLLERS (0-2) $0
NUMBER OF 6096/6102 DISK CONTROLLERS (0-2) $0
ENTER NUMBER OF STACKS (1-10) $3
ENTER NUMBER OF EXTRA BUFFERS REQUIRED (0-32) $4
MAXIMUM NUMBER OF SUB-DIRECTORIES ACCESSIBLE AT ONE TIME (0-32) $6
AUTO RESTART ON POWER FAIL? ("0"=NO "1"=YES) $0
RTC? ("0"=NO "1"=YES) $1
  RTC PRIMARY ("0")  SECONDARY ("1") OR INTERNAL ("2")? $0
    ENTER RTC FREQ (1=10HZ 2=50HZ 3=60HZ 4=100HZ 5=1000HZ) $1
PAPER TAPE READER? ("0"=NO "1"=YES) $0
PAPER TAPE PUNCH? ("0"=NO "1"=YES) $0
ENTER NUMBER OF LPT(0-2) $0
CARD READER? ("0"=NO "1"=YES) $0
PLOTTER? ("0"=NO "1"=YES) $0
QTY? ("0"=NO "1"=YES) $0
ALM? ("0"=NO "1"=YES) $0
COLUMN SIZE FOR $TTO (80 OR 132) $80
SECOND TTY? ("0"=NO "1"=YES) $0
CORE DUMP FACILITY? ("0"=NO  "1"=YES) $0
```

Figure 6-3. Double-Density Diskette-Based microNOVA SYSGEN Dialog

```
DOS SYSGEN REV 3.20
VALID ANSWERS ARE IN PARENTHESES RESPOND ACCORDINGLY

CORE STORAGE IN THOUSANDS OF WORDS (16-32) $32
IS THE SYSTEM FOR A MICRONOVA? (0=NO 1=YES) $0
NUMBER OF DISK CONTROLLERS(1-2) $1
  DEVICE PRIMARY("0") OR SECONDARY("1")? $0
  NUMBER OF DRIVES FOR CONTROLLER #1(1-4) $2
    ARE ANY 6045 TYPE? ("0"=NO "1"=YES) $0
    ARE ANY 6030 TYPE? ("0"=NO "1"=YES) $1
  SOFT ERROR REPORTING? ("0"=NO "1"=YES) $1
ENTER NUMBER OF STACKS (1-10) $3
ENTER NUMBER OF EXTRA BUFFERS REQUIRED (0-32) $6
MAXIMUM NUMBER OF SUB-DIRECTORIES ACCESSIBLE AT ONE TIME (0-32) $4
ENTER NUMBER OF MAG TAPE DRIVES (0-8) $0
AUTO RESTART ON POWER FAIL? ("0"=NO "1"=YES) $0
RTC? ("0"=NO "1"=YES) $1
  RTC PRIMARY ("0")  SECONDARY ("1") OR INTERNAL ("2")? $0
    ENTER RTC FREQ (1=10HZ 2=50HZ 3=60HZ 4=100HZ 5=1000HZ) $1
PAPER TAPE READER? ("0"=NO "1"=YES) $0
PAPER TAPE PUNCH? ("0"=NO "1"=YES) $0
ENTER NUMBER OF LPT(0-2) $0
CARD READER? ("0"=NO "1"=YES) $0
PLOTTER? ("0"=NO "1"=YES) $0
QTY? ("0"=NO "1"=YES) $0
ALM? ("0"=NO "1"=YES) $0
COLUMN SIZE FOR $TTO (80 OR 132) $80
SECOND TTY? ("0"=NO "1"=YES) $0
CORE DUMP FACILITY? ("0"=NO  "1"=YES) $0
```

Figure 6-4. Single-Density Diskette-Based NOVA SYSGEN Dialog

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 7
After SYSGEN -- Hard-Disk Systems

This chapter describes some things you should know about running DOS. These are:

- Starting Up DOS (Bootstrapping)
- Shutting Down DOS
- Full Initialization
- Accessing Other Disks
- Backing Up Your Files
- Generating Other DOS Systems

If this is your first DOS system generation, read the whole chapter; then you'll be done with the entire system generation procedure. In the future, if you need to review any of the topics cited above, reread the appropriate section. While reading, recall that *disk* means disk or diskette; *diskette* means only diskette.

To learn more about the CLI commands shown here, see the *RDOS/DOS CLI User's Manual,* 093-000109. To learn more about *using* DOS, read *Learning to Use Your RDOS/DOS System,* 069-000022.

Starting Up DOS (Bootstrapping)

After the purely mechanical steps of turning on devices, you start up DOS by *bootstrapping* it into memory from disk; you have already bootstrapped DOS twice - once for the starter system and once for your tailored system. You have also bootstrapped two other programs: DOSINIT and BOOT itself.

By bootstrapping, you instruct the computer to read the bootstrap root into memory from disk; the root then brings in program BOOT.SV. BOOT.SV asks *FILENAME?* and, if it can find the program you specify, brings this program into memory and executes it. The disk from which you bootstrap must have a bootstrap root and copy of BOOT.SV, and controller (DE0, DH0, DP0, or DE4). (This is why, if your disk and diskette share a controller, you had to make the diskette drive 0 and the disk drive 1 several times in the pre-SYSGEN chapter.) If you want to bootstrap a DOS system on a *diskette,* the diskette's write-protect hole must be covered. The bootstrap disk usually does (but need not) contain a DOS system or CLI.

On some systems, drives are hard-wired to drive numbers; on others, you can alter drive numbers via a disk's DRIVE 0 SELECT toggle switch, or by moving hardware jumpers, or by turning a unit select thumbwheel. But in most cases, you will want to maintain the current drive numbers, shown in Table 7-1. Thus the bootstrap disk must be in a drive whose name ends in 0 or 4.

1. Turn on the system console and any other display or printing consoles the system will be servicing. If the system console is an upper- and lowercase console, put it in ALPHA LOCK because BOOT.SV does not accept lowercase letters.

2. Power up your computer by turning or pressing the POWER switch to ON.

3. Ready your disk(s). If you removed a removable disk cartridge or pack after your last DOS session, insert it in its drive. If you have a nonremovable disk, or if you left a removable disk in its drive for convenience, proceed.

4. Press the rocker switch on the disk drive to READY. Wait for the READY light.

5. Now, with the preliminaries done, you can bootstrap. For a microNOVA computer, continue with this step; for a NOVA computer, go to step 6.

   a. With a programmed console (! prompt) or the console debug option, type

      nL (e.g., 100026L or 33L, or see Table 7-1)

      on the system console and go to step 7.

   b. With the hand-held console option, press the RESET key then the CLR D key. Enter *n* from the Table 2-2 (e.g., 100026 or 33) in the display. Press the PR LOAD key firmly and go to step 7.

   c. With CPU program load, press the computer front panel rocker switch to the PL/START position. Go to step 7.

Licensed Material-Property of Data General Corporation

Table 7-1. Disk/Diskette Device Codes and Names After SYSGEN

	microNOVA			NOVA		
Disk and Diskette Configuration	**n =**	**Disk Name**	**Diskette Name**	**n =**	**Disk Name**	**Diskette Name**
Sealed moving-head disk and double-density diskette on one controller	100026	DE0	DE1	100033	DP0	DP1
Dual-platter disk subsystem and single-density diskette	100027	DH0/ DH0F	DP0	100033	DP0/ DP0F	DP1

6. To program load a NOVA computer:

   a. With programmed console, the *system* console should show an exclamation point (!) prompt. (If not, press the computer POWER switch OFF and ON.) Type:

      100033L

      on the system console and go to the next step.

   b. With hardware data switches and auto program load, make sure that data switches are set to 100033 octal (switches 0, 11, 12, 14, and 15 up, the others down). Lift the RESET switch, then the PROGRAM LOAD switch; go to the next step.

   c. Without auto program load, execute full step 3c in the pre-SYSGEN chapter.

7. Your program load steps read the bootstrap root in from the beginning of the disk. The root invokes BOOT.SV, and BOOT.SV asks:

   FILENAME?

   Respond with the name of your DOS system, or of any other stand-alone program you want to execute. DKINIT.SV, BOOT.SV, or an RTOS or DOS system is a stand-alone program. For example, type:

   MYSYS)

   to bootstrap a system named MYSYS.SV on the bootstrap disk. If the system or program you want is on a different disk (not the one you are bootstrapping from), precede its name with a *directory specifier.* A directory specifier is simply the name of the disk (directory) that holds the system and a colon, e.g., DP0F:. Thus your response to the FILENAME query might be:

   DP0F:MYSYS)

   If the system is named SYS, and it is on the disk from which you are bootstrapping, you can simply type) in response to *FILENAME?* because SYS is the default name.

8. DOS starts up, asking you for the date and time:

   type DOS REV x.xx
   DATE (M/D/Y)? 1 16 79) (current date)

9. *TIME (H:M:S)?* 13 10) (current time)

   R

   With the CLI's prompt, your tailored DOS is ready to execute your commands. At this point, you may want to turn or press the computer power switch to the LOCK position; this disables all other front panel switches and prevents anyone from inadvertently stopping DOS by pressing these.

With DOS up and running, you can proceed to develop and run programs, using CLI commands to invoke text editors, loaders, debuggers, and high-level compilers (which initially you'll need to LOAD or MOVE onto your system disk from another DG diskette).

BOOT Command

When you have a DOS system running, you can bootstrap other systems or programs with the CLI BOOT command. You did this in Chapter 6, when you brought up your tailored system. BOOT will release the current system, then bring up the new system, just as if you had executed the program load steps. For example:

```
BOOT NEWSYS)
MASTER DEVICE RELEASED
type DOS REV x.xx
DATE? (M/D/Y) 1 18 79)
TIME? (H:M:S) 8)
R
```


Licensed Material-Property of Data General Corporation

If the system or program you want to bootstrap is on another disk, the disk must be initialized. (By initialized, we mean made part of the system with the CLI command INIT or DIR.) For example,

```
BOOT DP1:COMMSYS)
DIRECTORY NOT INITIALIZED: DP1:COMMSYS
R
INIT DP1)
R
BOOT DP1:COMMSYS)
MASTER DEVICE RELEASED

type DOS REV x.xx
DATE? (M/D/Y)
```

You can also BOOT stand-alone programs like DKINIT on other disks.

There is a variation of the BOOT command in which you type only the directory name of the disk that holds the desired program. BOOT then asks *FILENAME?* and your respond with the name of the program you want. For example:

```
BOOT DP0)
MASTER DEVICE RELEASED
FILENAME?
```

BOOTing is most useful if you have more than one DOS system on your disk(s) and want to switch among them according to your application.

After you bootstrap via the program load steps, your disk files are just as you left them when you last released the disk. When you BOOT, BOOT releases the DOS system, and all the things happen that occur during a normal RELEASE. These are described next.

Shutting Down DOS

Before shutting off power to the disk or computer, you must always RELEASE the disk that holds the DOS system. You can release this master disk by name, e.g.,

```
RELEASE DE0)  (DH0), DP0), etc.)
```

or you can use the CLI variable %MDIR%, which contains the name of the master directory, e.g.,

```
RELEASE %MDIR%)
```

After either command, the system will verify the release and shut down:

MASTER DEVICE RELEASED

When you see the RELEASED message, you can flip the disk switch to LOAD, wait for the LOAD light, flip the power switch to OFF, remove any removable disks from their drives (if you prefer), then turn off power to the disk drive(s), computer, and other peripherals. If there are diskettes on your system, remove the diskettes from the drives before turning the drive OFF - but be sure you RELEASE them first.

RELEASE of the master device provides an orderly shutdown; it releases all disk directories that were initialized, and -- in so doing -- it updates two crucial DOS directory files and writes them to each initialized disk. These files are the system directory (named SYS.DR) and the map directory (MAP.DR), and they control all file access in the system.

Full Initialization

If, for any reason, the DOS system stops before the master device has been RELEASEd, the DOS SYS.DR and MAP.DR directory files may be incorrect when you next bring up the system. Several things can stop the system before normal RELEASE: hardware or software failure, power failure without power fail support options, a user error in a program, or turning off the computer or disk drive before RELEASEing the master device.

If the SYS.DR and/or MAP.DR are wrong, as they could be if DOS terminates abnormally, the same disk space could be allocated to multiple files. Therefore, if DOS stops abnormally, we recommend full initialization (INIT/F) of all disks that were initialized when the failure occurred. This means typing the DOS INIT/F command to all disks involved. INIT/F writes a new SYS.DR and MAP.DR file to the disk, thus ensuring file integrity, but in so doing *it effectively destroys all files on the disk* by overwriting pointers to them. Thus, you should back up your files periodically, as described later in this chapter. By backing up your files, you minimize the amount of work that could be lost or destroyed by any kind of failure.

There are two ways to fully initialize your disk(s), as follows.

The first and most thorough way to do *full* initialization is to follow the steps described in your pre-SYSGEN chapter: Chapter 2, 3, 4, or 5. After the starter system comes up, you type INIT/F to all other disks that were initialized when the failure occurred. Another way is to bring up a DOS system from a backup disk(ette) and type INIT/F to all disks that were initialized at the failure.

Afterwards, you can LOAD, FLOAD, or MOVE your backup files, including your tailored system, onto your disk(s) from your backup medium. Then you can bootstrap your tailored system -- hopefully, having lost only a little work.

Licensed Material-Property of Data General Corporation

Accessing Other Disks

There are two steps that someone must follow for every new disk before DOS can use it: a DOSINIT FULL command and an INIT/F. If you are using a disk under DOS, you can assume that these two steps were performed; do not execute them again, because either one destroys all files on the disk. Two other steps are optional, but we recommend them for convenience. All steps presume a properly formatted disk; i.e., one made and supplied by Data General. The steps are, in order:

1. Run a DOSINIT FULL command on the disk. Mandatory for new disks, destroys all file structure on old disks.
2. Install a bootstrap root on the disk after bootstrapping BOOT.SV. Mandatory for master disk, optional for others; does not harm existing files.
3. Type an INIT/F command to the disk from DOS. Mandatory for new disks, effectively destroys all files.
4. Copy file BOOT.SV to the disk via a CLI MOVE command. Mandatory for master disk, optional for others; does not harm existing files.

Step 1, DKINIT FULL, detects bad blocks and allows DOS to recognize the disk; optional steps 2 and 4 allow you to bootstrap systems or programs from the disk; and step 3, INIT/F, writes a DOS system directory file (SYS.DR) and map directory file (MAP.DR) to the disk. Generally, unless DOS stops abnormally while this disk is initialized, you need execute these four steps only once for each disk.

As you may have noticed, the INIT command without /F is entirely different from INIT/F. INIT simply initializes a disk for access and does not destroy anything; you'll be using it a lot in the future. INIT/F, however, effectively destroys all files on the disk. It writes a new system directory file (SYS.DR) and map directory file (MAP.DR) to the disk; these files overwrite the old SYS.DR and MAP.DR files, if any. DOS needs these directory files to use the disk.

Even INIT/F won't work with a new disk, however, until DOSINIT has written an identifier and certain tables to the disk; this is why you must run a DOSINIT FULL command on each new disk.

To summarize, make sure that you run a DOSINIT FULL command on a new disk and type INIT/F to it from DOS before trying to use it. Then, unless you have problems, or are processing blank diskettes for file backup or user applications, forget about the DOSINIT FULL command and the /F switch on the INIT command.

Using the Fixed Disk (Dual-Platter Subsystems Only)

If you have a dual-platter disk, you should copy over BOOT.SV to the fixed disk. (Recall typing INIT/F to this disk and installing a bootstrap root on it in the pre-SYSGEN chapter.) Type:

```
MOVE/V  DH0F  BOOT.SV)    (DP0F for NOVA systems)
BOOT.SV
R
```

Later, depending on your application, you may want to copy your tailored system and the CLI to the fixed disk. The files involved are SYS.SV and SYS.OL (or sysname.SV and sysname.OL), CLI.SV, CLI.OL, and CLI.ER; to copy them over, use the MOVE command described in the CLI manual.

To bootstrap a system on the fixed disk, you must give the fixed-disk name as a directory specifier before the *sysname*. For example, when BOOT asks *FILENAME?*, you would reply:

```
DH0F:SYS)      (DP0F for NOVA systems)
```

to bring up a system named SYS.SV on the fixed disk.

Backing Up Your Files

As we mentioned earlier, it's simple prudence to make backup copies of your tailored DOS system and the source and data files you create under DOS. You can back up files by date or name, or use CLI templates, in the CLI MOVE or DUMP command. One procedure might be to back up new or modified files each day via MOVE or DUMP with the local /A switch, and to MOVE or DUMP *all* files each week.

Naturally, you need a backup medium for this, and diskettes are the most convenient. The rest of this section tells you how to prepare one or more diskettes and how to dump your tailored system and other files to it.

Preparing a Diskette and Copying Files to It

Follow these steps to prepare one or more blank diskettes and to copy files to it for backup.

1. Bootstrap DOS if it is not already running.

2. Turn the diskette drive ON if it is not already ON. Get a blank Data General diskette and wrap tape around the write-protect hole near the edge of the inner envelope. (DG supplies such tape with its diskettes.) Insert the diskette into its drive (labeled DE1, DP0, or DP1, as shown in Table 7-1).

Licensed Material-Property of Data General Corporation

3. BOOT DOSINIT and run a FULL command on the diskette as shown in the following dialog. The diskette model number should be familiar to you by now, but we repeat it for convenience: microNOVA double density, 6096; NOVA double density, 6097; microNOVA single density, 6038; NOVA single density, 6030.

   a. BOOT DOSINIT↵
      MASTER DEVICE RELEASED
      DOSINIT REV x.xx
   b. *DISK DRIVE MODEL NUMBER?* 6096↵ (6097↵), etc.)
   c. *DISK UNIT NAME?* DE1↵ (or DP1↵ or DP0↵))
   d. *COMMAND?* FULL↵
      FULL INIT DESTROYS ANY PREVIOUS...
   e. *DO YOU REALLY WANT A FULL INIT (YES OR NO)?* YES↵
   f. *NUMBER OF PATTERNS TO RUN (1-5)* 5↵
      (steps 3f-3; skipped for single density)
      **** PATTERN NUMBER 1 (125252) ****
      (DOSINIT runs patterns.)
      ALL PATTERNS RUN
      DO YOU WISH TO DECLARE ANY BLOCKS BAD...
   g. *.. THE BAD BLOCK TABLE?* NO↵
      DEFAULT REMAP AREA IS....
   h. *...REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?* ↵
   i. *REMAP AREA START...BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?* ↵
      DEFAULT FRAME SIZE...
   j. *...DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?* ↵

      FULL INIT COMPLETE
      COMMAND?

   k. If you want to prepare more diskettes for backup, remove the diskette from its drive, tape the write-protect hole on another diskette, insert it in the drive, type FULL↵, and repeat steps 3d through 3j. Do this for all diskettes you want to prepare.

   l. Type: STOP↵

4. Now bootstrap BOOT via the program load steps, install a bootstrap root on the diskette, then force BOOT to ask FILENAME? as shown:

   a. *FILENAME?* BOOT↵
   b. *BOOTSTRAP DEVICE SPECIFIER?* DE1↵ (DP1↵, same name as 3c)
   c. *INSTALL BOOTSTRAP (Y OR N)* Y

      DONE.

      BOOTSTRAP DEVICE SPECIFIER?

   d. If you want to install a bootstrap root on other diskettes from step 3, remove the diskette from its drive, insert another diskette in this drive, and repeat steps 4b and 4c; do this until you have installed roots on all the diskettes you wish to.

   e. *BOOTSTRAP DEVICE SPECIFIER?* DE0↵ (DH0↵, DP0↵ -- disk name from Table 7-1)
   f. *INSTALL BOOTSTRAP (Y OR N)* N
   g. *FILENAME?*

5. Bring up your DOS system as usual. When you receive the CLI prompt, do an INIT/F to the diskette in drive 1:

   INIT/F DE1↵ (DP1, etc.; diskette name)
   R

6. Copy the DOS system files, CLI and BOOT.SV, to the diskette via the MOVE command. Substitute your *sysname* for SYS if you named the DOS system *sysname.*

   MOVE/V□DE1□SYS.<OL□SV>□↑↵ (DP1, etc.)
   CLI.<OL□ER□SV>□BOOT.SV↵
   SYS.OL
   (files copied)
   R

7. Release the diskette:

   RELEASE DE1↵ (DP1, etc.)
   R

   Remove the diskette from its drive, write DOS SYSTEM BACKUP or equivalent name on its label (felt-tipped pens only), and replace it in the outer envelope.

Licensed Material-Property of Data General Corporation

8. If you ran DKINIT on other diskettes, insert one of them in the drive and type:

```
INIT/F DE1)       (DP1, etc.)
R
MOVE/V DE1 BOOT.SV)
BOOT.SV
R
RELEASE DE1)
R
```

   and remove it. Repeat this step for all prepared diskettes. Store all diskettes safely, away from strong magnetic fields.

9. These steps give you a system backup diskette and, if you processed other diskettes, ready-made diskettes for file backup via the MOVE or DUMP command. You can bootstrap a DOS system from any of these diskettes.

10. To use a prepared diskette for backup, insert it with write-hole covered in the appropriate drive (DE1, DP1, etc.), INIT it (without the /F switch), and copy over the files you want to back up. For example, assume that you want to back up all nonpermanent files created on or after February 14, 1979. You'd INIT the diskette, MOVE the files, and RELEASE the diskette:

```
INIT DE1)       (DP1, etc.)
R
MOVE/V/K□DE1□2-14-79/A)
.
(files copied to diskette.)
.
R
RELEASE DE1)
R
```

    The MOVE command, and other commands like DUMP and FDUMP, are further described in the CLI manual.

Later, whenever you want to back up files, issue a command sequence similar to that shown in step 10. You can use the same diskette, incrementing the date, or using another method, until diskette file space is exhausted.

Before you flip your disk drive switch to LOAD, and cut power to your computer system, always remember to type:

```
RELEASE DE0)      (DH0, DP0, etc., or %MDIR%)
MASTER DEVICE RELEASED
```

If you plan to use diskettes extensively or are developing programs for use on a diskette-based system, be aware that there are some differences between your hard-disk system and a diskette-based system. Most of these concern storage space and access speed. For more on this, read "Managing Diskette Space" and "System Speed" in Chapter 8.

Generating Other DOS Systems

To generate other DOS systems, you can simply type the SYSGEN command with a unique filename, as described in the CLI manual.

Often a hard-disk microNOVA system will run on a diskette-based microNOVA configuration, and a hard-disk NOVA system will run on a diskette-based NOVA configuration. This depends on the memory available in the target system and the diskette drivers selected at SYSGEN. To run a system on a similar machine, you can copy the system save (.SV) and overlay (.OL) files, CLI.SV, CLI.OL, CLI.ER, and BOOT.SV to a properly prepared diskette, and then try it. A microNOVA system, however, will *not* run on a NOVA, or vice versa, under any circumstances because the SYSGEN library files from which the code is taken differ. But you *can* generate a diskette-based NOVA system on a hard-disk microNOVA, or vice versa, by installing the proper bootstrap root and making sure that SYSGEN uses the proper SYSGEN libraries, as described next.

Generating a Diskette-Based DOS System to Run on a Different Machine

To do this, operate from a user directory. Bring up your DOS system following the procedure shown in Table 7-2.

Licensed Material-Property of Data General Corporation

Table 7-2. Generating a Diskette-Based DOS System to Run on a Different Machine

If your tailored DOS is not running, bootstrap it. Then type the following commands:

```
CDIR OTHERDIR)     (or equivalent directory name)
R
DIR OTHERDIR)
R
LINK RLDR.SV/2;LINK RLDR.OL/2)
LINK SYSGEN.SV/2)
R
```

Get the DG-supplied DOS diskette for the target computer type (NOVA if your SYSGEN machine is a microNOVA, and vice versa). Put this diskette in your primary diskette drive. Type:

```
DIR diskette) (DE1,DP1, etc.)
WARNING:DISK WRITE PROTECTED
R
MOVE/V OTHERDIR -DOS-.LB)
    .
    . (library names copied to the OTHERDIR directory)
R
RELEASE diskette)   (DE1,DP1, etc.)
R
```

Remove the diskette from its drive.

Now get a blank diskette, tape the write-protect hole, and put it in your primary diskette drive. Run DOSINIT on it, but when DOSINIT asks *DISK DRIVE MODEL NUMBER?*, answer for the *target* system. For a NOVA target system, answer 6097) or 6030) for double- or single-density diskettes, respectively. For a microNOVA target system, answer 6096) or 6038) for double- or single-density diskettes, respectively. Then specify drive 0 to the DISK UNIT? query and run a FULL command on the diskette. Bring up DOS and type:

```
INIT/F diskette)   (DE1,DP1, etc.)
R
MOVE/V diskette BOOT.SV)   (DE1,DP1, etc.)
R
DIR OTHERDIR)
R
SYSGEN□diskette:OTHERSYS.<SV/S□SG/V□LM/L>)   (DE1,DP1, etc.)
```

Proceed with SYSGEN for the different machine, as described in Chapter 6. The system will be placed on the diskette under OTHERSYS.SV and OTHERSYS.OL with dialog file and load map as previously described described. (You can use any legal filename instead of OTHERSYS.)

```
R
DIR %MDIR%
R
MOVE/V□diskette□CLI.OL□CLI.ER□CLI.SV)   (DE1,DP1, etc.)
    .
    . (Verification)
R
RELEASE diskette)   (DE1,DP1, etc.)
R
```

Now take the OTHERSYS diskette and the DG original diskette for the target system to the target system. Insert the DG original diskette in diskette drive 0 of the target system and program-load it as described in "Bootstrapping" earlier. When BOOT asks *FILENAME?*, type BOOT). When BOOT asks *BOOTSTRAP DEVICE SPECIFIER?*, remove the DG original diskette from drive 0 and insert the OTHERSYS diskette in drive 0. Type the target system diskette name (e.g., DP0, DE0), then Y. This installs the appropriate bootstrap root on OTHERSYS.

Now, repeat the diskette name you just typed (e.g., DP0,DE0), then N to make BOOT ask FILENAME? Answer with OTHERSYS) to the FILENAME? query. The system should run. Later, you may want to put user programs or utilities on the OTHERSYS diskette from your main system via the MOVE command.

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 8
After SYSGEN --Diskette-Based Systems

This chapter describes some things you should know about running DOS. These include starting up DOS, shutting it down, preparing and using blank diskettes, loading utilities sections for single-density diskettes, and optimizing your system diskette. The major headings are:

- Starting Up DOS (Bootstrapping)
- Shutting Down DOS
- Full Initialization
- Disk Access Overview
- Backing Up Your Files
- Loading the Utilities (Single-Density Only)
- Optimizing Your System Diskette
- Managing Diskette Space
- Generating Other DOS Systems

For your first DOS system, if you have double-density diskettes, read the first four sections, skip "Loading the Utilities", and optimize your system diskette as described in the "Optimizing" section. Then you'll be done with the whole process.

For single-density diskettes, you must load some utility programs. Read through the "Loading the Utilities" section, then optimize your system diskette, and scan "Managing Diskette Space." Then you'll be done with the system generation process.

As you read, recall that disk means either disk or diskette.

This chapter shows a number of CLI commands. Later, to learn more about these commands, see the *RDOS/DOS CLI User's Manual,* 093-000109. To learn more about *using* DOS, read *Learning to Use Your RDOS/DOS System,* 069-000022.

Starting Up DOS (Bootstrapping)

After the purely mechanical steps of turning on devices, you start up DOS by *bootstrapping* it into memory from disk. You have already bootstrapped DOS twice - once for the starter system and once for your tailored system. You have also bootstrapped two other programs: DOSINIT and BOOT itself.

When you bootstrap, you instruct the computer to read the bootstrap root into memory from disk; the root then brings in program BOOT.SV. BOOT.SV asks *FILENAME?* and, if it can find the program you specify, brings this program into memory and executes it. The disk from which you bootstrap must have a bootstrap root and copy of BOOT.SV, and it must be in the first drive on its controller (DE0 or DP0). If you want to bootstrap a DOS system, the system disk's write-protect hole must be covered. The bootstrap disk usually does (but need not) contain a DOS system or CLI.

On some systems, drives are hard-wired to drive numbers; on others, you can alter drive numbers via a thumbwheel. But in most cases, you will want to maintain the current drive numbers, shown in Table 8-1. Thus you'll usually put the bootstrap disk in a drive whose name ends in "0".

The preliminary steps are:

1. Turn on the system console and any other display or printing consoles the system will be servicing. If the system console is an upper- and lowercase console, put it in ALPHA LOCK because BOOT.SV does not accept lowercase letters.

2. Power up your computer by turning or pressing the POWER switch to ON.

3. Turn the diskette power switch to ON if it is not ON.

4. Insert your DOS system diskette in drive 0, if it is not already there.

5. Now, with the preliminaries done, you can bootstrap. For a microNOVA computer, continue with this step; for a NOVA computer, go to step 6.

   a. With a programmed console (! prompt) or the console debug option, type

      nL (e.g., 100026L or 33L, or see Table 8-1)

      on the system console and go to step 7.

Licensed Material-Property of Data General Corporation

Table 8-1. Diskette Device Codes and Names After SYSGEN

	microNOVA			NOVA		
Diskette Configuration:	**n=**	**Drive 0 Name**	**Drive 1 Name**	**Device Code =**	**Drive 0 Name**	**Drive 1 Name**
Double-density diskettes	100026	DE0	DE1	100033	DP0	DP1
Single-density diskettes	33	DP0	DP1	100033	DP0	DP1

b. With the hand-held console option, press the RESET key then the CLR D key. Enter n from Table 8-1 (e.g., 100026 or 33) in the display. Press the PR LOAD key firmly and go to step 7.

c. With CPU program load, press the computer front panel rocker switch to the PL/START position. Go to step 7.

6. To program load a NOVA computer:

a. With programmed console, the *system* console should show an exclamation point (!) prompt. (If not, press the computer POWER switch OFF and ON.) Type:

```
100033L
```

on the system console and go to the next step.

b. With hardware data switches and auto program load, make sure that data switches are set to 100033 octal (switches 0, 11, 12, 14, and 15 up, the others down). Lift the RESET switch, then the PROGRAM LOAD switch; go to the next step.

c. Without auto program load, execute full step 3c in the pre-SYSGEN chapter.

7. Your program load steps read the bootstrap root in from the beginning of the disk. The root invokes BOOT.SV, and BOOT.SV asks:

FILENAME?

Respond with the name of your DOS system, or of any other stand-alone program you want to execute. DKINIT.SV, BOOT.SV, or an RTOS or DOS system is a stand-alone program. For example, type:

```
MYSYS)
```

to bootstrap a system named MYSYS.SV on the bootstrap disk. If the system or program you want is on a different disk (not the one you are bootstrapping from), precede its name with a *directory specifier.* A directory specifier is simply the name of the disk (directory) that holds the system and a colon, e.g., DP1:. Thus your response to the FILENAME query might be:

```
DP1:MYSYS)
```

If the system is named SYS, and it is on the disk from which you are bootstrapping, you can simply type) in response to FILENAME? because SYS is the default name.

8. DOS starts up, asking you for the date and time:

type DOS REV x.xx
DATE (M/D/Y)? 1 16 79) (current date)

9. *TIME (H:M:S)?* 13 10) (current time)

```
R
```

With the CLI's R prompt, your tailored DOS is ready to execute your commands. At this point, you may want to turn or press the computer power switch to the LOCK position; this disables all other front panel switches and prevents anyone from inadvertently stopping DOS by pressing these.

With DOS up and running, you can proceed to develop and run programs, using CLI commands to invoke text editors, loaders, debuggers and high-level compilers (which initially you'll need to LOAD or MOVE onto your system disk from another DG diskette).

Licensed Material-Property of Data General Corporation

BOOT Command

When you have a DOS system running, you can bootstrap other systems or programs with the CLI BOOT command. You did this in Chapter 6, when you brought up your tailored system. BOOT will release the current system, then bring up the new system, just as if you had executed the program load steps. For example:

```
BOOT NEWSYS)
MASTER DEVICE RELEASED
type DOS REV x.xx
DATE? (M/D/Y) 1 18 79)
TIME? (H:M:S) 8)
R
```

If the system or program you want to bootstrap is on another disk, the disk must be initialized. (By *initialized,* we mean made part of the system with the CLI command INIT or DIR.) For example:

```
BOOT DP1:COMMSYS)
DIRECTORY NOT INITIALIZED: DP1:COMMSYS
R
INIT DP1)
R
BOOT DP1:COMMSYS)
MASTER DEVICE RELEASED

type DOS REV x.xx
DATE? (M/D/Y)
```

You can also BOOT stand-alone programs like DOSINIT on other disks.

There is a variation of the BOOT command in which you type only the directory name of the disk that holds the desired program. BOOT then asks *FILENAME?* and you respond with the name of the program you want. For example:

```
BOOT DP0)
MASTER DEVICE RELEASED
FILENAME?
```

BOOTing is most useful if you have more than one DOS system on your disk(s) and want to switch among them according to your application.

After you bootstrap via the program load steps, your disk files are just as you left them when you last released the disk. When you BOOT, BOOT releases the DOS system, and all the things happen that occur during a normal RELEASE. These are described next.

Shutting Down DOS

Before shutting off power to the disk and computer, you must always RELEASE the disk that holds the DOS system. You can release this master disk by name, e.g.,

```
RELEASE DE0) (or DP0)
```

or you can use the CLI variable %MDIR%, which contains the name of the master directory, e.g.,

```
RELEASE %MDIR%)
```

After either command, the system will verify the release and shut down:

MASTER DEVICE RELEASED

When you see the RELEASED message, you can remove the diskette(s) from their drive(s), turn the drives OFF, then turn off power to the computer and other peripherals.

RELEASE of the master device provides an orderly shutdown: it releases all disk directories that were initialized, and -- in so doing -- it updates two crucial DOS directory files and writes them to each initialized disk. These files are the system directory (named SYS.DR) and the map directory (MAP.DR), and they control all file access in the system.

Full Initialization

If, for any reason, the DOS system stops before the master device has been RELEASEd, the DOS SYS.DR and MAP.DR directory files may be incorrect when you next bring up the system. Several things can stop the system before normal RELEASE: hardware or software failure, power failure without power fail support options, a user error in a program, or turning off the computer or disk drive before RELEASEing the master device.

If the SYS.DR and/or MAP.DR are wrong, as they could be if DOS terminates abnormally, the same disk space could be allocated to multiple files. Therefore, if DOS stops abnormally, we recommend full initialization (INIT/F) of all disks that were initialized when the failure occurred. This means typing the DOS INIT/F command to all disks involved. INIT/F writes a new SYS.DR and MAP.DR file to the disk, thus ensuring file integrity, but in so doing *it effectively destroys all files on the disk* by overwriting pointers to them. Thus, you should back up your files periodically, as described later in this chapter. By backing up your files, you minimize the amount of work that could be lost or destroyed by any kind of failure.

Licensed Material-Property of Data General Corporation

There are two ways to fully initialize your disk(s), as follows.

The first and most thorough way to do *full* initialization is to follow the steps described in your pre-SYSGEN chapter: Chapter 2, 3, 4, or 5. After the starter system comes up, you type INIT/F to all other disks that were initialized when the failure occurred. Another way is to bring up a DOS system from a backup disk and type INIT/F to all disks that were initialized at the failure.

Afterwards, you can LOAD, FLOAD, or MOVE your backup files, including your tailored system, onto your disk(s) from your backup medium. Then you can bootstrap your tailored system -- hopefully, having lost only a little work.

Disk Access Overview

There are two steps that someone must follow for every new disk before DOS can use it: a DOSINIT FULL command and an INIT/F. If you are using a disk under DOS, you can assume that these two steps were performed; do not execute them again, because either one destroys all files on the disk. Two other steps are optional, but we recommend them for convenience. All steps presume a properly formatted disk; i.e., one made and supplied by Data General. The steps are, in order:

1. Run a DOSINIT FULL command on the disk. Mandatory for new disks, destroys all file structure on old disks.
2. Install a bootstrap root on the disk after bootstrapping BOOT.SV. Mandatory for master disk, optional for others; does not harm existing files.
3. Type an INIT/F command to the disk from DOS. Mandatory for new disks, effectively destroys all files.
4. Copy file BOOT.SV to the disk via a CLI MOVE command. Mandatory for master disk, optional for others; does not harm existing files.

Step 1, DOSINIT FULL, detects bad blocks and allows DOS to recognize the disk; optional steps 2 and 4 allow you to bootstrap systems or programs from the disk; and step 3, INIT/F, writes a DOS system directory file (SYS.DR) and map directory file (MAP.DR) to the disk. Generally, unless DOS stops abnormally while this disk is initialized, you need execute these four steps only once for each disk.

As you may have noticed, the INIT command without /F is entirely different from INIT/F. INIT simply initializes a disk for access and does not destroy anything, and you'll be using it a lot in the future. INIT/F, however, effectively destroys all files on the disk. It writes a new system directory file (SYS.DR) and map directory file (MAP.DR) to the disk; these files overwrite the old SYS.DR and MAP.DR files, if any. DOS needs these directory files to use the disk.

Even INIT/F won't work with a new disk, however, until DOSINIT has written an identifier and certain tables to the disk; this is why you must run a DOSINIT FULL command on each new disk.

To summarize, make sure that you run a DOSINIT FULL command on a new disk and type INIT/F to it from DOS before trying to use it. Then, unless you have problems, or are processing blank diskettes for file backup or user applications, forget about the DOSINIT FULL command and the /F switch on the INIT command.

Backing Up Your Files

As we mentioned earlier, it's simple prudence to make back-up copies of your tailored DOS system and the source and data files you create under DOS. You can back up files by date or name, or use CLI templates, in the CLI MOVE or DUMP command. One procedure might be to back up new or modified files each day via MOVE or DUMP with the local /A switch, and to MOVE or DUMP "all" files each week.

Naturally, you need a backup medium for this, and diskettes are the most convenient. The rest of this section tells you how to prepare one or more diskettes and how to copy your tailored system and other files to it.

Preparing a Diskette and Copying Files to It

Follow these steps to prepare one or more blank diskettes and to copy files to it for backup.

1. Bootstrap DOS if it is not already running.

2. Turn the diskette drive ON if it is not already ON. Get a blank Data General diskette and wrap tape around the write-protect hole near the edge of the inner envelope. (DG supplies such tape with its diskettes.) Insert the diskette into its drive (labeled DE1 or DP1).

3. BOOT DOSINIT and run a FULL command on the diskette as shown in the following dialog. The diskette model number should be familiar to you by now, but we repeat it for convenience: microNOVA double-density, 6096; NOVA double density, 6097; microNOVA single density, 6038; NOVA single density, 6030.

Licensed Material-Property of Data General Corporation

a. BOOT DOSINIT)
MASTER DEVICE RELEASED
DOSINIT REV x.xx

b. *DISK DRIVE MODEL NUMBER?* 6096)
(6097), etc.)

c. *DISK UNIT NAME?* DE1) (or DP1))
COMMAND? FULL)
FULL INIT DESTROYS ANY PREVIOUS...

e. *DO YOU REALLY WANT A FULL INIT (YES OR NO)?* YES)

f. *NUMBER OF PATTERNS TO RUN (1-5)* 5)
**** PATTERN NUMBER 1 (125252) ****
(steps 3f-3j skipped for single density)
(DOSINIT runs patterns.)
ALL PATTERNS RUN
DO YOU WISH TO DECLARE ANY BLOCKS BAD...

g. *.. THE BAD BLOCK TABLE?* NO)
DEFAULT REMAP AREA IS....

h. *...REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?*)

i. *REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?*)
DEFAULT FRAME SIZE...

j. *...DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?*)

FULL INIT COMPLETE
COMMAND?

k. If you want to prepare more diskettes for backup, remove the diskette from its drive, tape the write-protect hole on another diskette, insert it in the drive, type FULL), and repeat steps 3d through 3j. Do this for all diskettes you want to prepare.

l. Type:

```
STOP)
```

4. Now bootstrap BOOT via the program load steps, install a bootstrap root on the diskette, then force BOOT to ask FILENAME? as shown:

a. *FILENAME?* BOOT)

b. *BOOTSTRAP DEVICE SPECIFIER?* DE1)
(or DP1))

c. *INSTALL BOOTSTRAP (Y OR N)* Y

DONE.

BOOTSTRAP DEVICE SPECIFIER?

d. If you want to install a bootstrap root on other diskettes from step 3, remove the diskette from its drive, insert another diskette in this drive, and repeat steps 4b and 4c; do this until you have installed roots on all the diskettes you wish to.

e. *BOOTSTRAP DEVICE SPECIFIER?* DE0)
(or DP0))

f. *INSTALL BOOTSTRAP (Y OR N)* N

g. *FILENAME?*

5. Bring up your DOS system as usual. When you receive the CLI prompt, do an INIT/F to the diskette in drive 1:

```
INIT/F DE1) (or DP1)
R
```

6. Copy the DOS system files, CLI, and BOOT.SV to the diskette via the MOVE command. Substitute your *sysname* for SYS if you named the DOS system *sysname.*

```
MOVE/V□DE1□SYS.<OL□SV>□↑)    (or DP1)
CLI.<OL□ER□SV>□BOOT.SV)
SYS.OL
(files copied)
R
```

7. Release the diskette:

```
RELEASE DE1)    (or DP1)
R
```

Remove the diskette from its drive, write DOS SYSTEM BACKUP or equivalent name on its label (felt-tipped pens only), and replace it in the outer envelope.

8. If you ran DOSINIT on other diskettes, insert one of them in the drive and type:

```
INIT/F DE1)      (or DP1)
R
MOVE/V DE1 BOOT.SV)
BOOT.SV

R
RELEASE DE1)
R
```

and remove it. Repeat this step for all prepared diskettes. Store all diskettes safely, away from strong magnetic fields.

Licensed Material-Property of Data General Corporation

9. These steps give you a system backup diskette, and, if you processed other diskettes, ready-made diskettes for file backup via the MOVE or DUMP command. You can bootstrap a DOS system from any of these diskettes.

10. To use a prepared diskette for backup, insert it with write-hole covered in the appropriate drive (DE1 or DP1), INIT it (without the /F switch), and copy over the files you want to back up. For example, assume that you want to back up all nonpermanent files created on or after February 14, 1979. You'd INIT the diskette, MOVE the files, and RELEASE the diskette:

```
INIT/F DE1)      (or DP1)
R
MOVE/V/K□DE1□2-14-79/A)
.
(files copied to diskette.)
.
R
RELEASE DE1)
R
```

The MOVE command, and other commands like DUMP and FDUMP, are further described in the CLI manual.

Later, whenever you want to back up files, issue a command sequence similar to that shown in step 10. You can use the same diskette, incrementing the date, or using another method, until diskette file space is exhausted.

Before removing the diskette(s) from their drives, flipping the diskette power switch OFF, and cutting power to the computer system, always remember to type:

```
RELEASE DE0)     (or DP0)
MASTER DEVICE RELEASED
```

Loading the Utilities (Single Density Only)

This section explains how to load the utilities you need onto your system diskette; read it only if you have single-density diskettes.

It's now time to load some utilities onto your system diskette. (You cannot use these programs on the DG UTILITIES diskette; you must LOAD them onto another diskette first.)

The utilities will not all fit on your system diskette, but you may not need them all anyway. If you want more utilities than will fit, LOAD them onto another diskette later, then use them from the other diskette.

You can use the DISK) command at any time to discover how much space you have left; at this point, a substantial number of the original 608 blocks should be left on MY SYSTEM DISKETTE. For example:

```
DISK)
LEFT:394 USED:214
R
```

Now, find the DG UTILITIES diskette, leave the write-protect hole open, and insert it in drive DP0. Chapter 9 shows the utility programs on this diskette; you may want to examine this chapter before proceeding.

Now, initialize the UTILITIES diskette by typing:

```
INIT DP0)
WARNING:DISK WRITE PROTECTED
R
```

If you want, you can list the filenames in this diskette without loading them by typing LOAD/N DP0:UTILITIES). But to save time, you might simply choose the ones you want from the table in Chapter 9, then LOAD them for real. One essential utility that you'll need for almost any application is the system library (SYS.LB). You already have several others on your system diskette: DOSINIT.SV, BOOT.SV, RLDR.SV, and RLDR.OL.

The system source files (those which end with the .SR extension) are required by the Macroassembler (MAC files) to build its permanent symbol table file (MAC.PS). MAC is a large utility, with its required .PS file, and you may not want to load it now. If you omit it, you can also omit the .SR files. Later, if you want MAC, you can LOAD the MAC files and .SR files onto another diskette, build MAC.PS, then MOVE all MAC files (including MAC.PS) to a system diskette. For a moderate assembly-language application, you might choose the Text Editor (EDIT.SV) or Superedit (NSPEED.SV and SPEED.ER), the Extended Assembler (ASM.SV and XREF.SV), and a disk file editor (SEDIT.SV or OEDIT.SV). You also need the SYS.LB utility described above. You might also want the CLI copy utility (COPY.SV).

For a FORTRAN application, you'll need a text editor, the Extended Assembler, the FORTRAN IV libraries (supplied on another diskette). You also need the SYS.LB utility described above. To merge FORTRAN libraries (needed only once), you might want the CLI copy program, COPY.SV.

Licensed Material-Property of Data General Corporation

For an Extended BASIC application, you'll need the BASIC programs and interpreter (supplied on another diskette). You may need the SYS.LB utility, described above, to generate your BASIC system -- and you may need to devote one DOS system diskette (without utilities) to BASIC System Generation because the BASIC SYSGEN libraries require a lot of space. You might want the CLI program, COPY.SV, on your BASIC/DOS system diskette.

For the last word on required files, consult the Release Notice listing supplied with your software or, for FORTRAN, your language reference manual.

When you have decided on the utilities you want, type:

```
LOAD/V□DP0:UTILITIES□utility-filename-and-extension□↑)
  utility-filename-and-extension...)
```

The CLI will verify each program loaded. When you get the R prompt back, type DISK) again to check the amount of disk space remaining; remember that you'll probably want to put SOME user files on your system diskette. If you get a FILE SPACE EXHAUSTED error message, at least you'll know what utilities were loaded, so that you can LOAD them onto another diskette later. After you have loaded a utility, you can check its space requirements with the LIST/E/A filename-and-extension command.

For example:

```
DISK)
 LEFT:339 USED:269
```

(More than half the space on the system diskette remains.)

```
R
LOAD/V DP0:UTILITIES ASM.SV↑)
XREF.SV COPY.SV↑)
NSPEED.SV SPEED.ER SYS.LB↑)
```

(Load files.)

```
ASM.SV
XREF.SV
   .
   .
R
```

(Verification.)

```
DISK)
 LEFT:200 USED:408
```

(Your own answer might differ.)

```
R
```

When you have finished loading the utilities, type:

```
RELEASE DP0)
R
RELEASE DP1)
MASTER DEVICE RELEASED
```

Remove the DG UTILITIES diskette from DP0 and store it safely. Remove the tailored system diskette from DP1, cross out MY SYSTEM DISKETTE on the label, and write MY BACKUP DISKETTE on the label.

Insert the tailored system diskette in DP0. Get a blank DG diskette, tape the write-protect hole, write MY STARTER DISKETTE on the label, and insert it in DP1. Go back to "Preparing Diskettes" in this chapter and execute steps 1 through 5 (don't execute step 6) on the diskette in DP1. Then return to the next section to optimize your system diskette.

Optimizing Your System Diskette

DOS will run more efficiently if you place the system and CLI overlay files near the outside "edge" of the diskette (near track 0). Now you can do this, using the original MY STARTER DISKETTE on a double-density system, or the newly prepared MY STARTER DISKETTE on a single-density system. (For double density, we had you prepare this diskette before SYSGEN, and it should still be in drive DE1. For single density, we had you prepare it after SYSGEN.)

To optimize the MY SYSTEM DISKETTE, bootstrap DOS if it is not already running, and type the commands:

```
INIT DE1)    (or DP1 -- no /F switch!)
R
MOVE/V□DE1□SYS.OL□CLI.<OL□ER;↑)   (or DP1)
MOVE/V□DEL□-EED.-□ CLI.SV□SYS.-/N□BOOT.-/N;↑)
MOVE/V□DE1□SYS.-□BOOT.-)
SYS.OL
   .
(filenames copied)
   .
R
```

This procedure places essential overlay files and some program files near the edge of the diskette, where DOS can access them quickly. If you want to use the standard text editor (instead of Superedit), replace the characters -EED.- with EDIT.SV. If you plan to use primarily BASIC, replace the CLI. < OL ER >" in the first MOVE command with "CLI.OL BASIC.< OL SW >".

Licensed Material-Property of Data General Corporation

Now, test the optimized system:

```
BOOT DE1:SYS)   (or DP1)
MASTER DEVICE RELEASED

type DOS REV x.xx
DATE (M/D/Y)? 1 16 79)
TIME (H:M:S)? 13 40)
R
```

Congratulations! You now have an optimized system diskette and a less efficient (but still usable) backup diskette. Type:

```
RELEASE %MDIR%)
MASTER DEVICE RELEASED
```

Later (or now, if you want to experiment with DOS), you'll insert this diskette in drive 0 and bootstrap as described earlier. If you want to do this now -- while all your hardware is ready -- you need execute only bootstrap steps 5 and 7 (microNOVA) or steps 6 and 7 (NOVA) to bring up your optimized tailored DOS system.

If you have a double-density system and are reading this for the first time, you should skip the next section and return to it when your diskettes start filling up with files. You are virtually done with the entire SYSGEN procedure, and you can either load other DG software (if any) onto your system diskette, experiment with DOS for awhile using the manuals described at the beginning of the chapter, or remove your tailored diskette and power down your computer system.

If you have a single-density system, the next section provides important material, and you should read it.

Managing Diskette Space

This section shows you some ways to conserve diskette storage space on your system. It pertains most to single-density diskettes (which have much less space than double-density diskettes).

The Link Entry

The link entry allows you to access a file from any user directory as if there were a copy of it in the current directory. Each link costs virtually nothing in file space. For example, assume that you want to write and compile a FORTRAN IV program. Also assume that DP0, a single-density system diskette, contains all files you need to do this. These files are:

NSPEED.SV	Superedit.
SPEED.ER	Editor error interpreter.
FORT.SV	FORTRAN IV interface.
FIV.SV	FORTRAN IV compiler.
ASM.SV	Extended assembler.
FORT.LB	Four FORTRAN IV libraries, merged with the LFE utility.
RLDR.SV	Relocatable loader.
RLDR.OL	Loader overlay file.
SYS.LB	System library.

You also have a system, CLI, and other files on your system diskette; let's assume that there are 40 or so blocks left on it. This is not enough space for efficient compilation and loading. You place a new diskette (prepared by DOSINIT FULL command) in DP1, and make it into a program development diskette by typing the commands shown in Figure 8-1. The first and last DISK commands in the figure show dramatically how links can save space.

As the figure shows, you can write, compile, and load a FORTRAN IV program on DP1 with nearly 600 blocks of space to play with. With double density, the figure would be more than 2400 blocks.

Listing File

Many CLI and utility program commands allow you to specify a listing file with the local /L switch. If you decide that you want a listing, don't specify a disk file for it (this would use disk space). Instead, specify a paper listing with local /L. If your system console is a hard-copy terminal, insert its output name ($TTO) with local /L; for example:

```
ASM MYFILE FILE1 $TTO/L)
```

If you have a line printer, specify its name with local /L; for example:

```
ASM MYFILE FILE 1 $LPT/L)
```

Depending on the speed of your console printer, you *may* want to store listing files on disk for later printing and DELETE them after printing.

Moving Files

Almost all files in DOS are randomly organized, which makes them fairly easy to copy onto diskette with MOVE and LOAD commands. DOS can copy random files in blocks, placing each block wherever it finds space on diskette.

Contiguous files, however, must be in one piece. All overlay files (those with .OL extensions) are contiguous; thus, when you copy a program that has an overlay file, you should copy the overlay file first; for example:

```
MOVE/V□DP1□CLI. <OL□SV□ER>)
```

DOS is more likely to find space for CLI.OL on DP1 before, not after, it has copied CLI.SV and CLI.ER. Both CLI.SV and CLI.ER are random files.

Licensed Material-Property of Data General Corporation

```
INIT/F DP1)                          Create new file directory on DP1. Semicolon allows you to put multiple
R                                    commands on one line.
DIR DP1;DISK)

LEFT:593 USED:15                     Plenty of space left. (Double-density would be around 2450.)
R

LINK NSPEED.SV %MDIR%:NSPEED.SV)     Create link to NSPEED in master directory (specified by %MDIR%; here, you
                                     could have typed DP0 instead of %MDIR%).
R
LINK SPEED.ER %MDIR%:SPEED.ER)       Continue linking.
R

LINK ASM.SV %MDIR%:ASM.SV)           And so on...
R

Link...

LINK RLDR.OL %MDIR%:RLDR.OL)         The last link.
R
DISK)
 LEFT:593 USED:15                    (Double-density would be around 2450.)
R
```

Figure 8-1. Using Link Entries to Save Space

File Housecleaning

If you are low on diskette space, it's very important to DELETE all files which you don't really need. You can MOVE such files to a storage diskette if you want to keep them.

After you have built a program and it works, you can DELETE its intermediate relocatable binary file. Relocatable binary filenames have the extension .RB.

Note that the DELETE command won't work on any file you have MOVEd or copied (COPY) from a write-protected diskette (not true for DISK-format diskettes provided by DG). This is a good reason for keeping write-protect holes covered (another is that DOS won't let you bootstrap from a write-protected diskette). If you do copy one or more files from a write-locked diskette with the MOVE or COPY commands, the copy will receive the file attributes APW, which mean that you can never modify or delete it. To get rid of it, you'll have to run DOSINIT or INIT/F the diskette, and either of these destroy all other files as well.

You can copy a file from a write-locked diskette without giving the copy APW attributes, if you use the XFER command. For example, to copy MYFILE.SR (an ASCII source file) from write-locked DP1 to DP0, you'd get to DP1 (DIR DP1)), then type:

```
XFER/A MYFILE.SR DP0:MYFILE.SR)
```

See the *CLI User's Manual* for more on XFER.

Backing Up Your Files

It's simple prudence to create and save backup copies of the source files and data files you create under DOS. You can back up files by date or name with the CLI command MOVE or DUMP; or you can copy all files with the CLI command COPY (see *CLI Manual).* Alternatively, you can bring up DOSINIT and use DOSINIT's COPY or DUPLICATE command. The DOSINIT commands are described later in this chapter.

System Speed

DOS will run most efficiently if you place the system and CLI overlay files near the outside edge of the diskette (near track 0). You did this earlier when you copied your system and utilities to MY SYSTEM DISKETTE; you can do it at any time in the future by following the general MOVE format shown earlier. For example, run DOSINIT on a blank diskette and install a bootstrap root on it. Place the destination diskette in DP1 and bring up DOS on the diskette you want to optimize in DP0. Then, type:

```
INIT/F DP1)
R
MOVE/V DP1 SYS.OL CLI.<OL ER>;↑)
MOVE/V DP1 <CLI SYS BOOT>.SV/N;↑)
MOVE/V DP1 <CLI SYS BOOT>.SV)
      .
      .
R
```

Now BOOT the system on DP1 to test it; that's all you need do. (If you plan to use primarily BASIC, MOVE files BASIC.OL and BASIC.SW immediately after CLI.ER.)

Licensed Material-Property of Data General Corporation

Generating Other DOS Systems

On a double-density system, you can generate a new DOS system by simply typing the SYSGEN command as shown in Chapter 6.

On a single-density system, you must place MY STARTER DISKETTE in DP0 and place a fully initialized diskette with bootstrap root on it in DP1. Bring up DOS on DP0 and INIT the diskette in DP1. Type

```
MLM)
```

to set up links for SYSGEN on DP1; then type the SYSGEN command as shown in Chapter 6 and follow the post-SYSGEN steps shown in Chapter 6. All of these steps generate the new system on DP1; they are necessary because there isn't room on DP0 (MY STARTER DISKETTE) for the new system files.

Generating a System to Run on a Different Machine

A microNOVA system will not run on a NOVA computer, and vice versa, because the system libraries from which the code is taken differ.

You can, however, create a NOVA system diskette on your microNOVA system, and vice versa, with a little effort. Figure 8-2 shows you how to do this. In either case, we assume that your target system has only one diskette drive; if it has two drives, follow the procedure shown for the target system in Chapter 4 or 5, then run SYSGEN as shown in Chapter 6 for the target system.

- Put MY SYSTEM DISKETTE in drive 0. Label a new, blank diskette OTHERSYS, tape the write-protect hole, and insert it in drive 1. Bring up DOSINIT via steps 1-3 (given earlier). When DOSINIT asks *DISK DRIVE MODEL NUMBER?*, type in the model number for the *target* system. For a NOVA target system, answer `6097)` or `6030)` for a double- or single-density diskette, respectively. For a microNOVA target system, answer `6096)` or `6038)` for a double- or single-density diskette, respectively. Now specify drive 1 to the DISK UNIT? query and run a FULL command on the OTHERSYS diskette.
- Install a bootstrap root on DP1 as in step 4 in this chapter.
- Bring up the system on drive 0; then type `INIT/F` to the diskette in drive 1.
- Copy the system, the CLI, and BOOT to OTHERSYS:

  `MOVE/V diskette SYS.<OL SV>CLI.<OL SV ER>↑)` (diskette is `DE1` or `DP1`)
- Bring up the system on the diskette in drive 1 (`BOOT DX1:SYS)`). Remove the diskette from drive 0 and insert the Data General original diskette for your target system in drive 0.

Figure 8-2. Generating a System to Run on a Different Machine

Licensed Material-Property of Data General Corporation

- Load your target system SYSGEN libraries by typing:

```
DIR DE0) (or DP0))
R
MOVE/V DE1-.LB)
      .
      . (files copied to diskette in drive 1)
      .
R
RELEASE DE0)
```

- Remove the DG original diskette from drive 0, insert your MY STARTER DISKETTE in drive 0. Bring up the system on drive 0
  BOOT DX0:SYS)).

- Now make room on the OTHERSYS diskette in drive 1 and link to the required files:

```
DIR DE1) (or DP1))
R
DELETE SYS.-)
R
LINK RLDR.(SV.OL) %MDIR%:RLDR.(SV,OL))
R
LINK SYSGEN.SV %MDIR%:SYSGEN.SV
R
```

- Now, generate the target system on OTHERSYS:

```
SYSGEN OTHERSYS.<SV/S SG/V LM/L>)
```

  (You can use any unique filename instead of OTHERSYS.)

- When SYSGEN is done, RELEASE DE0).- (or DP0), %MDIR%)

- Take the DG original diskette for the target system and your OTHERSYS diskette to your target system. Insert the DG original diskette, program load it on the target system, then answer BOOT) to the *FILENAME?* query.

- When the console asks *BOOTSTRAP DEVICE SPECIFIER?*, remove the DG original diskette and insert your OTHERSYS system diskette. Type the target system name for drive 0 (e.g., DE0, DP0), then answer Y to the next question. This installs a target system bootstrap root on the OTHERSYS diskette.

- Now, program load the OTHERSYS diskette on the target system; it should run.

Figure 8-2. Generating a System to Run on a Different Machine (continued)

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 9
DOS UTILITIES

The following table describes the utility programs and source files that Data General supplies with each DOS system -- either on the lone DOS diskette (double density) or the DOS STARTER and UTILITY diskettes (single density). Many of these programs are accompanied by their own software manuals, as described. The source files (those that end in .SR) are in ASCII, thus you can TYPE or PRINT them to learn more about them.

Table 9-1. DOS Utilities

Program Filename	Program Purpose
EDIT.SV	Text Editor (separate manual required)
EDIT.RB	Text Editor relocatable binary file.
MEDIT.SV	Multiterminal Text Editor.
NSPEED.SV	Super (text) Editor for NOVA computers (manual provided).
SPEED.ER	Supereditor error message text file.
ASM.SV	Extended assembler (manual provided).
XREF.SV	Extended assembler cross-reference generator.
MAC.SV	Macroassembler (manual provided).
MACXR.SV	Cross-reference generator.
MBID.SR	microNOVA Basic Instruction Definitions. (All of these -.SR files are used primarily to build the Macroassembler permanent symbol file, MAC.PS.)
NBID.SR	NOVA Basic Instruction Definitions.
NSID.SR	NOVA Stack Instruction Definitions.
N4ID.SR	NOVA 4 Instruction Definitions, also apply to microNOVA MP-200.
NSKID.SR	NOVA Skip Instruction Definitions.
FPID.SR	NOVA Floating-Point Instruction Definitions.
OSID.SR	Operating System (DOS) Instruction Definitions.
NFPID.SR	ECLIPSE hardware Floating-Point Instruction Definitions.
PARU.SR	DOS User Parameter Definitions.
PARS.SR	DOS System Parameter Definitions.
ALMSPD.SR	ALM/ULM line specification source file, described in this manual.
ALMSPD.RB	Assembled ALMSPD.SR with default line characteristics.
RFPI.RB	Floating-Point Interpreter relocatable binary file (manual provided).
N3SAC3.RB	When loaded (RLDR) with a user program, this makes .SYSTM calls return the frame pointer, instead of the User Stack Pointer, in AC3, for NOVA 3/4s only (described in *DOS Reference Manual).*
LFE.SV	Library File Editor (manual provided).

Licensed Material-Property of Data General Corporation

Table 9-1. DOS Utilities (continued)

Program Filename	Program Purpose
SEDIT.SV	Symbolic File Editor (manual provided).
OEDIT.SV	Octal File Editor (manual provided).
DSKED.SV	Stand-alone Disk Editor (manual provided).
IDEB.RB	Interrupts-off Debugger (debugger manual provided).
ENPAT.SV	Patch File Creation program (described in CLI manual).
PATCH.SV	Patch Installation Program (also described in CLI manual).
RLDR.SV	Extended Relocatable Loader program file (manual provided).
RLDR.OL	Relocatable Loader overlay file.
SYSGEN.SV	DOS system generation program (described in this manual and CLI manual).
SYS.LB	System library, contains tasking code, buffered I/O package, debugger (described in the RLDR manual, *DOS Reference Manual,* and debugger manual.)
SYS5.LB	Old (pre-rev 2.00 DOS) version of SYS.LB.
FDUMP.SV	Fast disk dump program (described in CLI manual).
FLOAD.SV	Fast disk load program (also described in CLI manual).
DOSINIT.SV	Disk Initializer (described in this manual).
BOOT.SV	Bootstrap and root installer program (described in this manual).
PROM.SV	Programmable-ROM (PROM) utility program to program microNOVA PROM boards (described in Release Notice).
MICROBOOT.SV	microNOVA bootstrap installer program. You can BOOT MICROBOOT) to install a microNOVA bootstrap root while running on a NOVA system.

End of Chapter

Licensed Material-Property of Data General Corporation

Chapter 10
The DOSINIT Initializer

Before you put any files on a disk or diskette, you must first initialize it with the Initializer Program, DOSINIT.SV. This applies to any disk you plan to use on your system.

After you run the DOSINIT FULL command, be sure to type the INIT/F command to the new disk when DOS is running. INIT/F writes a new file directory to the disk and allows you to use it. Naturally, you should *never* INIT/F a disk that holds valuable data.

DOSINIT runs as a stand-alone program which you read into the computer from any disk via the BOOT command. Once you have read DOSINIT into memory, it will run until you STOP it. You can remove the diskette from which you read it in, and DOSINIT will continue to run happily for as long as you want to use it. This is true for all stand-alone programs.

When it runs, DOSINIT asks you several questions and you supply the correct answers. If you make a typing mistake, press RUBOUT to delete characters one by one; DOSINIT will echo a dash (-) for each character erased.

Initial Dialog

After you read DOSINIT into the computer, it says:

DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER?

Respond with the appropriate model number, from either the second or fourth column of Table 10-1.

If you give an invalid response, DOSINIT says:

UNKNOWN DRIVE TYPE

and repeats the question.

DOSINIT next needs to know the logical name of the drive that holds your disk:

DISK UNIT?

Respond with the drive identifier, as determined by the controller device code and drive which holds the disk, from the third or fifth column of Table 10-1. You can initialize in any drive in the system.

Licensed Material-Property of Data General Corporation

Table 10-1. Disk Model Numbers and Unit Names for DOSINIT

	microNOVA		NOVA	
Kind of Drive That Holds Disk	**For MODEL NUMBER, Type**	**For UNIT NAME, Type**	**For MODEL NUMBER, Type**	**For UNIT NAME, Type**
Sealed moving-head drive				
1st controller (microNOVA code 26, NOVA code 33)	6102	DE0	6099	DP0,DP1, DP2 or DP3
2nd controller (microNOVA 66, NOVA 73)	6102	DE4	6099	DP4, DP5, DP6 or DP7
Dual-platter disk subsystem				
1st controller (microNOVA code 27, NOVA code 33)	6095	DH0, DH0F	6045	DP0, DP0F DP1, DP1F DP2, DP2F DP3, DP3F
2nd controller (microNOVA 67, NOVA 73)	6095	DH1, DH1F		DP4, DP4F DP5, DP5F DP6, DP6F DP7, DP7F
Double-density diskette				
1st controller (microNOVA code 26, NOVA code 33)	6096	DE0, DE1 DE2, DE3	6097	DP0, DP1 DP2, DP3
2nd controller (microNOVA 66, NOVA 73)	6096	DE4, DE5 DE6, DE7	6097	DP4, DP5 DP6, DP7
Single-density diskette				
1st controller (code 33)	6038	DP0, DP1	6030	DP0, DP1 DP2, DP3 DP4, DP5 DP6, DP7
2nd controller (73)	6038	DP2, DP3	6030	
3rd controller (30)	6038	DP4, DP5	-	-
4th controller (70)	6038	DP6, DP7	-	-

Licensed Material-Property of Data General Corporation

These logical names also apply when you're running under DOS.

If you give an illegal response, DOSINIT says:

ILLEGAL DISK UNIT DECLARATION

and repeats the question.

After you correctly identify the disk, DOSINIT recalibrates it; it then requests a command:

COMMAND?

DOSINIT is now ready to execute one of the following functions:

FULL)	Runs patterns on disk to check for bad blocks; sets frame size. Required for all new disks. DESTROYS EXISTING FILES.
PARTIAL)	Hard disk or double-density diskette ONLY. Inspects disk for bad blocks and enters any it finds in bad block table. Does not destroy files.
VERIFY)	Inspects the disk for bad blocks but does not destroy any files on it.
LIST)	Describes the disk type and gives bad block information.
DISK)	Restarts DOSINIT program at the DISK UNIT query.
COPY)	Copies a standard disk to another disk; zeroes soft error count on destination disk.
DUPLICATE)	Copies any disk to another disk; does not change soft error count.
FRAME)	Hard disk or double-density diskette ONLY. Defines frame size for DOS system directory (SYS.DR).
REMAP)	Hard disk or double-density diskette ONLY. Establishes a new remap area for bad accounting information; requires INIT/F afterward.
ENTER)	Hard disk or double-density diskette ONLY. Enters bad block information in the bad block table.
STOP)	Halts the computer.

If you enter anything other than a DOSINIT command, it says:

UNKNOWN COMMAND - COMMANDS ARE FULL, VERIFY PARTIAL, LIST, FRAME, REMAP, ENTER, COPY, DUPLICATE, DISK, STOP

If you enter an inappropriate command for a single-density diskette, DOSINIT says:

THIS COMMAND MAY NOT BE USED ON DOS SINGLE DENSITY DISKETTES

Although double-density diskettes are physically diskettes, DOSINIT treats them as hard disks; thus you can use all DOSINIT commands on them.

If you enter a FULL, REMAP, or FRAME command, DOSINIT gives you a chance to abort before it executes because any of these require an INIT/F from DOS, which, by writing a virgin file directory to the disk, effectively destroys all files on it.

If DOSINIT has never initialized the disk, you can use only the FULL and DUPLICATE commands. If you try another command on such a disk DOSINIT says:

INVALID DISK ID BLOCK...
ABORTING OPERATION DUE TO FATAL ERROR(S)

You must therefore fully initialize the disk with FULL). DOSINIT thus forces you to run patterns on all disks you plan to use for data storage on your system. (DUPLICATE, which can copy a nonstandard-format diskette, is an exception.)

After the dialog for each command (except STOP), DOSINIT will repeat the request:

COMMAND?

for another command on the current disk, so you must type DISK) if you want to process a different one.

FULL Command

When you type FULL, DOSINIT fully initializes the disk. It writes five patterns, in blocks of 256 words each, to each disk block; then it read-checks the blocks against the original pattern. If DOSINIT cannot read-check that pattern on a block, it gives you a bad block error message. DOS can run on a disk or double-density diskette with bad blocks, but it cannot run on a single-density diskette with even one bad block, nor can you use such a diskette for data storage.

Licensed Material-Property of Data General Corporation

The patterns for each 16-bit word in each block are:

Pattern Number:	Bit Configuration:	Octal Value:
1	1010101010101010	125252
2	0101010101010101	052525
3	1101101101101101	155555
4	0000000000000000	000000
5	1111111111111111	177777

For a hard disk or double-density diskette, DOSINIT allows you to specify a number of patterns. We recommend that you run all five to check thoroughly for bad blocks despite the amount of time this may take. DOSINIT places the locations of any bad blocks it finds in a bad block table (called a REMAP area) on the disk, and it allows you to specify disk FRAME size (explained under FRAME command).

For a single-density diskette, DOSINIT gives you no opinions at all: it runs all five patterns, tolerates no bad blocks, and sets a frame size of five.

For a hard disk, a sample FULL dialog is:

DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER? 6095)

DISK UNIT? DH1F

COMMAND? FULL)

FULL INIT DESTROYS ANY PREVIOUS DISK/DISKETTE STRUCTURE
DOS INIT/F MUST BE ISSUED AFTER FULL INIT.
DO YOU REALLY WANT A FULL INIT? (YES OR NO) YES)

NUMBER OF PATTERNS TO RUN (1-5)? 5)

**** PATTERN # 1 (125252) ****
**** PATTERN # 2 (052525) ****
**** PATTERN # 3 (155555) ****
**** PATTERN # 4 (000000) ****
**** PATTERN # 5 (177777) ****

**** ALL PATTERNS RUN ****

DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE? NO)

DEFAULT REMAP AREA SIZE IS 12 BLOCKS LONG
IT NEEDS TO BE AT LEAST n BLOCKS LONG

REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?)
REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT))

DEFAULT FRAME SIZE IS 53
MIN IS 1 AND MAX IS 816
DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

FULL INIT COMPLETE

COMMAND?

For a single-density diskette, a sample dialog is:

DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER? 6038) (microNOVA)
6030) (NOVA)

DISK UNIT? DP0)

COMMAND? FULL)

FULL INIT DESTROYS ANY PREVIOUS DISKETTE STRUCTURE DOS INIT/F MUST BE DONE ON DISK AFTER COMMAND DO YOU REALLY WANT A FULL INIT (YES OR NO)? YES)

**** PATTERN # 1 (125252) ****
**** PATTERN # 2 (052525) ****
**** PATTERN # 3 (155555) ****
**** PATTERN # 4 (000000) ****
**** PATTERN # 5 (177777) ****

**** ALL PATTERNS RUN ****

FULL INIT COMPLETE

COMMAND?

Licensed Material-Property of Data General Corporation

DOSINIT may also type out error messages. These are:

Error Message	Take This Action
ILLEGAL NUMBER OF PATTERNS	Specify a number between 1 and 5.
CRITICAL DISK BLOCKS ARE BAD. DOS CANNOT BE BUILT, ABORTING	Reformat the disk.
TOO MANY DISK ERRORS TO COMPLETE.	Reformat the disk.
CHECKSUM ERROR ON BLOCK # bbbbbb UNIT MPn STATUS:DIA code DIB code DIC code ABORTING OPERATION DUE TO FATAL ERRORS	Diskette. Try command again. If error recurs, drive head may need cleaning, or diskette may need reformatting.
DRIVE UNSAFE # bbbbbb UNIT XXn	Diskette. The write-protect hole may be open. Tape it.
ONE OR MORE DISKETTE BLOCKS ARE BAD	Reformat the diskette; if this doesn't help, discard it.

PARTIAL Command

The PARTIAL command checks the disk for bad blocks and enters any new ones overflow the bad block table, you must run FULL on the disk. PARTIAL does not destroy existing files. A typical sequence is:

COMMAND? PARTIAL

**** CHECKING FOR BAD BLOCKS ****

VERIFY COMPLETE

COMMAND?

If DOSINIT finds bad blocks, it identifies them in the form:

HEAD SECTOR CYLINDER/BAD BLOCK NUMBER

... ...

... ...

Error and status messages are:

Message	Take This Action
UPDATING DISK FORMAT REV. NUMBER TO CURRENT	None.
NEW ERRORS FOUND ON DISK, UPDATING BAD BLOCK TABLE TO INCLUDE THEM.	None.
NOT ENOUGH ROOM FOR UPDATE SUGGEST FULL INIT.	Run FULL on disk.
CRITICAL DISK BLOCKS ARE BAD SUGGEST FULL INIT.	Run on disk.

VERIFY Command

VERIFY instructs DOSINIT to check all blocks and to identify any bad blocks. DOSINIT does not write to the disk except to update the revision number (if needed).

A typical sequence is: ...

COMMAND? VERIFY)

**** CHECKING FOR BAD BLOCKS ****

VERIFY COMPLETE

Error and status messages are:

Message	Take This Action
UPDATING FORMAT REV. NUMBER TO CURRENT	None.
ERRORS FOUND ON DISKETTE	The diskette is going bad. COPY it.

If it finds bad block, DOSINIT identifies them in the same way it does for PARTIAL.

Licensed Material-Property of Data General Corporation

LIST Command

LIST displays the disk or diskette drive type and any bad blocks which already exist on the disk. It differs from PARTIAL and VERIFY in that it doesn't run a new check on it. For example, on a hard disk:

COMMAND? LIST)
6095 DISK DRIVE ON UNIT DH0F
FRAME SIZE = 5
REMAP AREA SIZE = 12
REMAP AREA START BLOCK NUMBER = 23064
THERE ARE NO BAD BLOCKS

(The frame size is decimal, the START BLOCK NUMBER octal.)

If there are bad blocks, DOSINIT identifies them in the same way it does for PARTIAL.

For a single-density diskette, sample dialog is:

COMMAND? LIST)
6030 DISK DRIVE ON UNIT DP1
FRAME SIZE = 5
THERE ARE NO BAD BLOCKS

DISK Command

DISK restarts DOSINIT at the query:

DOSINIT REV x.xx
DISK DRIVE MODEL NUMBER?

so you can work with a new disk or diskette.

COPY and DUPLICATE Commands

The COPY and DUPLICATE commands copy one disk to another and require at least two identical disk drives. You may have used COPY to copy the DG original disk when you prepared for SYSGEN. COPY and DUPLICATE are very similar, but they differ in two ways:

- COPY requires that both the source and destination disks be standard DOS-formatted disks. DUPLICATE doesn't care about the format of either diskette; you can use it to format nonstandard disks.
- COPY zeros the soft error table on the destination disk, whereas DUPLICATE copies the table as is. (If you specified soft error reporting at SYSGEN, DOS records these errors in a table on disk. If the error count reaches 30 octal for any track, DOS will not allow you to INIT the disk. You must then copy the disk with COPY, which zeros the table on the copy; you can then INIT the copy. The DUPLICATE command does not zero the count; thus it cannot make a usable copy of such a disk.)

Both COPY and DUPLICATE copy every file, directory, and the bootstrap root from the source disk to the destination disk. Both commands produce physical copies (aside from the soft error count). The CLI COPY command copies every file and directory, but not the bootstrap root; it produces a logical copy.

Both COPY and DUPLICATE ask you questions about the source and destination disks. COPY will not make the copy if you haven't run a FULL command on the destination disk; DUPLICATE doesn't care about this. We recommend, however, that you run a FULL command on ALL disks you plan to use on your system to check for bad blocks. When DOSINIT starts up, it asks the *DISK DRIVE MODEL* number question, then the *DISK UNIT* question. Reply to the latter question with the drive which will hold the copy disk. DOSINIT then requests a

COMMAND?

Unless you want to copy the disk that holds DOSINIT, remove this disk. Insert a blank disk with the write-hole taped (if applicable) in the drive you specified above; then insert your original disk in the other drive. Type:

COPY) or DUPLICATE)

DOSINIT then asks you about source and destination drives, as shown in Figure 10-1. Then it makes the copy and says:

I HAVE FINISHED MAKING YOUR COPY
ANOTHER COPY?

For another copy of the source disk, type Y); for a copy of a different disk, remove the source disk, insert the new original disk, and type Y). If you don't want another copy, type N); DOSINIT then asks:

COMMAND?

Figure 10-1 summarizes the steps you take to copy to one or more disks.

Licensed Material-Property of Data General Corporation

1. Bring up DOSINIT from a system disk via the BOOT command or program load steps.

2. *DOSINIT REV x.xx*
   DISK DRIVE MODEL NUMBER? nnnn) (see table 10-1)

3. *DISK UNIT NAME?* Dxx? (see Table 10-1)

   At this point, drive 0 should hold the disk you want to copy. If it does not, remove the disk from drive 0 and insert your original. Place the destination disk in drive 1. If the destination disk has been initialized with DOSINIT, go to step 5. Otherwise, type:

4. FULL)

   FULL INIT DESTROYS...
   .....(YES OR NO)? YES)

   NUMBER OF PATTERNS TO RUN (1-5)? 5) (next questions skipped for single-density diskettes)

   **** PATTERN # 1(125252) ****

   DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT
   ARE NOT ALREADY IN THE BAD BLOCK TABLE? NO)

   DEFAULT REMAP AREA IS 12 BLOCKS LONG
   IT NEEDS TO BE AT LEAST yy BLOCKS LONG
   REMAP AREA SIZE (TYPE RETURN FOR DEFAULT))

   REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?)

   DEAFULT FRAME SIZE IS nn
   MIN IS 1 AND MAX IS mm
   DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)?)

   FULL INIT COMPLETE
   COMMAND?

5. COPY) or DUPLICATE)
   COPY DISKETTE IS ON xxn
   NOW TELL ME ABOUT THE ORIGINAL DISKETTE
   DISK DRIVE MODEL NUMBER? nnnn) (as in step 2).
   DISK UNIT NAME? Dx0) (Table 10-1)
   I AM ABOUT TO COPY Dxx0 TO xxn. IS THIS CORRECT? (Table 10-1)
   ANSWER (YES) TO CONTINUE, (NO) TO STOP

6. YES)

7. *I HAVE FINISHED MAKING YOUR COPY*

   ANOTHER COPY?

   For another copy of disk in drive 0, type YES), or insert new disk in drive 0 and type YES). Ot erwise, type NO).

To make another COPY or DUPLICATE of this disk, remove the copy from drive 1, insert another taped disk in drive 1, and execute steps 4-7 again.

Remove the original from drive 0 and the copy from drive 1, store them safely.

Figure 10-1. Copying a Disk

Licensed Material-Property of Data General Corporation

Error messages you may get from COPY follow. (You might receive the first of these messages from DUPLICATE.)

Error Message:	Take This Action:
DRIVE UNSAFE # bbbbbb UNIT MPn ABORTING OPERATION DUE TO FATAL ERRORS	Cover the copy disk's write-protect hole with tape. (Are you *sure* this is a blank disk?)
HARD ERROR ON ORIGINAL DISKETTE; I CAN'T COPY IT	Swap the disk in the two drives, type DISK, select drives again, and type command again.
COPY DISKETTE NOT INITIALIZED	Do FULL), then COPY).
INVALID DISK ID BLOCK ON UNIT MPn ABORTING OPERATION DUE TO FATAL ERRORS	Do FULL), then COPY).
WRITE ERROR ON COPY DISKETTE	Reformat the disk, run FULL on it, then try again.

If you get a *HARD ERROR* message, DOSINIT will tell you about the bad block position as it does for the PARTIAL command.

FRAME Command

With FRAME, you can alter a disk's frame size. The frame size establishes the original number of disk blocks for the DOS sytem directory, SYS.DR. DOS runs most efficiently when all of your filenames for each user directory fit within one frame; response time slows considerably if DOS needs to examine overflow frames. If you will have many user directories with relatively few files in them, you may want a smaller frame than the default size. If you will have few user directories with many files in each, then you may want a larger frame size than the default. Generally, a good frame size is approximately one-tenth the number of files which will occupy any directory (user directory or global directory, like DP0) on the disk. The frame size should be a prime number.

Provide a frame size according to the following example:

COMMAND? FRAME)

COMMAND DESTROYS ANY PREVIOUS DOS DISK STRUCTURE DOS INIT/F MUST BE DONE ON DISK AFTER COMMAND TYPE CONTROL-A NOW TO ABORT WITHOUT LOSS

DEFAULT FRAME SIZE IS 53
MIN IS 1, AND MAX IS 816

DISK FRAME SIZE (TYPE RETURN FOR DEFAULT)? 29)

COMMAND?

The one possible error message is:

ILLEGAL FRAME SIZE

Specify a number between the minimum and maximum.

REMAP Command

REMAP establishes a new bad block remap area on a hard disk; it requires full initialization. You must remap a part of DOSINIT FULL command, and you may also want to REMAP if one of the disk blocks within the remap area is bad. When you type:

REMAP)

DOSINIT gives you the DESTROYS warning:

COMMAND DESTROYS ANY PREVIOUS DOS DISK STRUCTURE

....
TYPE CONTROL-A NOW TO ABORT WITHOUT LOSS

Then, DOSINIT asks:

DO YOU WISH TO DECLARE ANY BLOCKS BAD THAT ARE NOT ALREADY IN THE BAD BLOCK TABLE?

If you respond YES), DOSINIT asks for the

BAD BLOCK NUMBER (TYPE RETURN TO STOP)

Type in the physical bad block number (in octal), or the head, sector, and cylinder location, separated by commas. DOSINIT acknowledges your response with:

BAD BLOCK ENTERED
BAD BLOCK NUMBER (TYPE RETURN TO STOP)

Continue to enter bad blocks until you have specified then all. Then type only) to the BAD BLOCK NUMBER request, and DOSINIT will ask:

DO YOU WISH TO DECLARE ANY MORE BLOCKS BAD? NO)

Licensed Material-Property of Data General Corporation

After you answer NO), DOSINIT tells you that the

DEFAULT REMAP AREA IS 12 BLOCKS LONGS IT NEEDS TO BE AT LEAST nn BLOCKS LONG

REMAP AREA SIZE (TYPE RETURN FOR DEFAULT)?

when *nn* is the number of bad blocks found during the original FULL pattern run plus the number you declared in the BAD BLOCK series. Specify the new length in decimal (126 maximum) that you want for the new remap area. You can type type RETURN for the default, if you wish. The DOSINIT asks for the

REMAP AREA START BLOCK NUMBER (TYPE RETURN FOR DEFAULT)?

The default remap area is at the end (highest physical block numbers) of the disk, but if this section has bad blocks you will need to move it elsewhere. You can enter either the physical block number (in octal), or the head, sector, and cylinder location, separated by commas. Generally, you should place the table near the end of the disk: around 23000_8 for a toploader type of disk or 57000_8 for a sealed disk.

Now, if you are remapping as part of a DOSINIT FULL command, it asks the FRAME questions, described next, under FRAME. Otherwise, it asks:

COMMAND?

to accept your next request.

Error messages you might receive from REMAP are:

Message	Take This Action
THERE IS NO CURRENT REMAP AREA, RUN FULL INIT TO ESTABLISH ONE.	Respond FULL) to *COMMAND?*
ILLEGAL DISK BLOCK NUMBER	Correctly rekey your entry.
DOS WILL NOT RUN WITH THIS BLOCK BAD. BLOCK NOT ACCEPTED	Reformat the disk if this block is truly bad. (Blocks 0 through 5 cannot be bad for DOS to run.)
BAD BLOCK LIST IS FULL, UNABLE TO ENTER ANY MORE BAD BLOCKS	Remap again, enlarging the remap area size.
NO ROOM FOR BAD BLOCK REMAP AREA DUE TO TOO MANY BAD BLOCKS- ABORTING	Reformat disk and run FULL command on it.
ILLEGAL REMAP AREA START BLOCK NUMBER	Pick another area.
BAD BLOCK CONTAINED IN REMAP AREA SPECIFIED, PLEASE SPECIFY ANOTHER AREA	Pick an area with contiguous good blocks.

ENTER Command

ENTER allows you to manually enter bad blocks in the disk's bad block table, but it does not require a DOS INIT/F, and thus does not destroy all files. Normally, DOSINIT identifies bad blocks on the original FULL command, or you can have it done with PARTIAL, or do it manually with REMAP. Any blocks you ENTER will be placed in the existing bad block table, but if the table overflows, you must run a REMAP or FULL on the disk to enlarge the table.

As with REMAP, enter blocks by physical number (octal), or by head, sector, and cylinder numbers, separated by commans, as in the following example:

COMMAND? ENTER)

BAD BLOCK NUMBER (TYPE RETURN TO STOP)
136)

BAD BLOCK ENTERED
BAD BLOCK NUMBER (TYPE RETURN TO STOP)
)

DO YOU WISH TO DECLARE ANY MORE BLOCKS BAD? NO)

COMMAND?

Licensed Material-Property of Data General Corporation

Possible messages are:

Message	Take This Action
ILLEGAL DISK BLOCK NUMBER	Correctly rekey your entry.
DOS WILL NOT RUN WITH THIS BLOCK BAD, BLOCK NOT ACCEPTED	Reformat the disk, if this block is truly bad. (Blocks 0 through 5 must be okay for DOS to run.)
BAD BLOCK LIST IS FULL, UNABLE TO ENTER ANY MORE BAD BLOCKS.	Run a REMAP or FULL to enlarge remap area size.
BLOCK IS PART OF BAD BLOCK REMAP AREA, IT CAN ONLY BE DECLARED BAD USING FULL INIT OR REMAP.	Try to REMAP to a different area; if this doesn't work, reformat the disk.

STOP Command

The STOP command halts the computer. To restart DOSINIT on a microNOVA, press the CONT key (with hand-held console), CONTINUE rocker switch (with CPU program load), or type P) (with console debug). On a NOVA system with programmed console, type P); with hardware data switches, press the CONTINUE panel switch.

End of Chapter

Licensed Material-Property of Data General Corporation

Appendix A
Errors and Error Messages

This appendix describes common errors and problems that can occur during the system generation process and how to recover from them.

If you make a typing mistake, but haven't yet pressed), use the DEL or RUBOUT key to remove the bad characters sequentially. Depending on your type of system console and the program, the bad characters will disappear one by one, or an underscore (_) or backarrow (<) will appear for each character erased. To stop execution *after* you have pressed), type CTRL-A for all programs except BOOT.SV.

Errors that DOSINIT may display while executing a COMMAND are described in Chapter 10.

Error messages appear in Table A-1 alphabetically.

Table A-1. Errors, Explanations, and Recovery Action

Message	Probable Cause(s)	Take This Action
nothing (during bootstrap attempt)	Bootstrap disk not inserted in first drive of controller, or not READY.	READY bootstrap disk in proper drive.
	Wrong device code.	Correct device code as shown in program load steps, Chapter 7 or 8.
	Abnormal termination of program pr system.	Press disk drive switch to LOAD, then READY; or open and close diskette door (either step resets disk read/write head to track 0). See "Shutting Down DOS" in Chapter 7 or 8 for impact of abnormal system termination.
	Disk does not have bootstrap root and BOOT.SV on it.	Install these as described in pre-SYSGEN chapter or Chapter 7 or 8.
	Disk jumpered to nonstandard device code.	Check microNOVA jumpers, as shown in microNOVA hardware manual.
! or ?	For NOVA 4 machines, programmed console is in console mode (someone may have accidentally hit the BREAK key).	Type P)
DEVICE OFF LINE-UNIT n	This disk you specified is not on line, or doesn't exist.	Put disk *n* on line or correct the command.

Licensed Material-Property of Data General Corporation

Table A-1. Errors, Explanations, and Recovery Action (continued)

Message	Probable Cause(s)	Take This Action
DEVICE TIMEOUT - xxn	Same as *DEVICE OFF LINE.*	Same as *DEVICE OFF LINE.*
DISK ERROR -STATUS xxx	Disk format error.	Consult disk hardware manual.
DISK FORMAT ERROR	DOS cannot access the disk.	Run DOSINIT FULL) on the disk; then do INIT/F.
FILE ALREADY EXISTS	The filename you tried to MOVE already exists (perhaps as a link entry) in the destination directory.	You may have omitted a step (e.g., UNLINK -.-)) Go back and execute the step.
FILE DATA ERROR	DOS cannot access the file or disk.	You may have forgotten to run DOSINIT on the disk (be sure to do INIT/F afterward). If the filename mentioned is SYS.DR, you must type INIT/F to the disk.
FILE DOES NOT EXIST	DOS cannot find the file you specified on the disk you specified.	You may have given the wrong directory specifier (e.g., DE1: or DP1:) to the starter system, or omitted a step.
	DOS does not recognize the device you specified.	Generate another DOS system with support for the device.
FILE NOT FOUND	BOOT cannot find the file specified on the disk you specified.	Check the directory specifier (e.g., DE1: or DP1:) and filename; rekey the command line.
ILLEGAL FILENAME	An illegal character was part of the command line.	Rekey the command line.
INSUFFICIENT MEMORY FOR SYSTEM OPERATION-SYSGEN ERROR	The computer doesn't have enough memory to execute this system or program.	Bootstrap the starter system and regenerate a DOS system for less memory.
INSUFFICIENT MEMORY TO LOAD PROGRAM	Same as previous cause.	Same as previous action.
MASTER DEVICE DRIVER NOT LOADED -- SYSGEN ERROR	This DOS system does not contain a device driver for the disk you are trying to bootstrap from.	Bootstrap the starter system and regenerate the DOS system; make sure to tell SYSGEN that you *do* want support for this type of disk controller, and, generally, that the controller is primary.
NO SUCH DIRECTORY	This DOS system does not recognize the disk you specified.	Check directory specifier (DE1: or DP1:); rekey command.
WARNING: MASTER DEVICE MAP.DR IS ERRONREOUS	DOS found inconsistencies in disk block allocation file.	Bootstrap DOS on another disk and type INIT/F to this disk.

End of Appendix

Licensed Material-Property of Data General Corporation

Index

NOTE: The letter "f" means "and the following page"; "ff" means "and the following pages". Capitalized entries indicate commands or acronyms.

ALM 6-7
assembler
  files 9-1f
  loading, diskette 8-6
auto restart 6-5

backup files
  diskette-based systems 8-4ff
  hard-disk systems 7-4ff
bad blocks
  diskettes 4-4f, 5-4f, 10-3
  hard disk 2-5f, 3-5f, 10-3
    table 6-4
BASIC, diskette 8-7
BOOT command
  diskette 8-3
  hard disk 7-2f
bootstrap root, installing
  diskette, microNOVA 4-6f, 8-5
  diskette, NOVA 5-6f, 8-5
  hard disk, microNOVA 2-8, 7-5
  hard disk, NOVA 3-8f, 7-5
bootstrapping
  diskette 8-1ff
  hard disk 7-1ff
BREAK key 1-1
buffers, system 6-5

card reader 6-6
console, computer
  control characters 1-1
  computer 1-2f
  data switches 1-2f, 3-3, 5-3
  display, see terminal
  hand-held, see hand-held console
  printers, see terminal
  system 1-9
console debug
  identifying 1-6
  memory for 6-9
  program load with 7-1f, 8-1f

COPY, diskette 10-6
  preSYSGEN, microNOVA, hard disk 2-3f
  preSYSGEN, microNOVA, diskette 4-4f
  preSYSGEN, NOVA, hard disk 3-4f
  preSYSGEN, NOVA, diskette 5-4f
core dump 6-7
crash 7-3, 8-3f
CTRL characters 1-1

dialog file 6-1, 6-10
data switches 1-2f, 3-3, 5-3
device code
  diskette, microNOVA 2-3, 4-3, 8-2
  diskette, NOVA 3-3, 5-3, 8-2
  hard disk 7-2
  summary 10-2
device filenames 6-2ff
directory, system (SYS.DR)
  diskette 8-3f
  hard disk 7-3
directory, user 6-5
DISK command
  CLI 8-7
  DOSINIT 10-6
disk, hard
  bootstrap root 2-8, 3-8f, 7-5
  bootstrapping 7-1f
  device code 7-2
  DOSINIT 10-2ff
  drive numbers 2-3, 2-13, 8-1
  fixed disk 2-8ff, 6-1
  identifying type 1-4ff
  inserting cartridge 1-9
  pictures 1-5
  preparing for SYSGEN Chapters 2, 3
  SYSGEN questions 6-2ff
diskette
  bootstrap, see bootstrap root
  copying, see COPY
  DOSINIT, see DOSINIT
  drive numbers, see disk(ette) drive numbers
  inserting 1-8
  labeling 1-8
  preparing, see preparing diskettes
  preparing for SYSGEN 4-1ff or 5-1ff
  soft errors 6-3, 10-6
  space, managing 8-8f
  system, see system diskettes

Licensed Material-Property of Data General Corporation

disk(ette) drive numbers
diskette, microNOVA 4-2f, 8-2
diskette, NOVA 5-2f, 8-2
hard disk, microNOVA 2-2f, 7-2
hard disk, NOVA 3-3, 7-2
DOS, definition of 1-1
languages 1-1
DOSINIT initializer
commands 10-1ff
initial session
diskette, microNOVA 4-2ff
diskette, NOVA 5-2ff
hard disk, microNOVA 2-2ff
hard disk, NOVA 3-3ff
patterns 8-2f
DUPLICATE command (DOSINIT) 10-6f

editors 9-1f
ENTER command (DOSINIT) 10-9f
errors
DOSINIT 10-4f
general messages A-1ff
stop program after 1-1

file
backup 7-4ff, 8-4ff
housecleaning 8-9
listing 8-8
filenames of devices 6-2ff
formatter, see diskette formatter
FRAME command (DOSINIT) 10-8
FULL command (DOSINT) 10-3f

generating other DOS systems
for current equipment
diskette 8-10
hard disk 7-6
for other equipment
diskette 7-6f, 8-10f

hand-held console
general 1-2
memory for 6-9f
using, diskette 4-3
using, hard disk 2-3
hard errors, see bad blocks

initialization
DOSINIT (FULL) 10-3f
DOS (INIT/F)
diskette 8-3f
hard disk 7-3f
INIT/F 7-3f, 8-3f
installing, bootstrap root; see bootstrap root, installing

labeling diskettes 1-8
line printer 6-6
link entry 8-8f
LIST command
CLI 8-7
DOSINIT 10-6
listing file 8-8
LOAD command
diskette 8-6f
preSYSGEN, hard disk
microNOVA 2-10
NOVA 3-9
load map 6-1, 6-9
loading
BOOT, see BOOT
DOSINIT, see DOSINIT
programs into computer, see program load
utilities
diskette 8-6f
hard disk, microNOVA 2-10
hard disk, NOVA 3-9

macro-assembler, see assembler
mag tape 6-5
managing diskette space 8-8f
memory 6-10f
mistakes, stop program after 1-1
MOVE command
preSYSGEN, hard disk
microNOVA 2-9
NOVA 3-9
post SYSGEN
diskette 8-5f
hard disk 7-5f
moving files 7-5f, 8-5f
multiplexors 6-1, 6-6ff

paper tape 6-6
PARTIAL command (DOSINIT) 10-5
patches 6-9
plotter 6-6
preparing diskettes
diskette-based system 8-4f
hard disk system 7-4f
preparing for SYSGEN
diskette, microNOVA Chapter 4
diskette, NOVA Chapter 5
hard disk, microNOVA Chapter 2
hard disk, NOVA Chapter 3
program load
preSYSGEN
diskette-based 4-2f, 5-2f
hard disk based 2-2f, 3-3f
post SYSGEN
diskette-based 8-1f
hard disk based 7-1f
overview 1-2
programmed console 1-2f

QTY 6-1, 6-6f

Licensed Material-Property of Data General Corporation

real-time clock 6-5
releasing system 7-2, 8-3
REMAP command (DOSINIT) 10-8f
RTC 6-5
running DOS
  diskettes 8-1f, 8-8f
  hard disk 7-1ff
running DOSINIT, see DOSINIT

soft errors 6-3, 10-6
space on diskettes 8-8f
speed, diskette system 8-7f
stacks, system 6-4f
starter diskette, see system diskettes
starter system, bringing up
  diskette, microNOVA 4-7
  diskette, NOVA 5-7
  hard disk, microNOVA 2-8f
  hard disk, NOVA 3-8
STOP command (DOSINIT) 10-10
STOP program, see CTRL characters
sub-directory, see directory
summaries
  DOSINIT
    diskette, microNOVA 4-4f
    diskette, NOVA 5-4ff
    hard disk, microNOVA 2-6f
    hard disk, NOVA 3-6
  memory usage 6-9f
  preSYSGEN steps
    diskette, microNOVA 4-8ff
    diskette, NOVA 5-8ff
    hard disk, microNOVA 2-10ff
    hard disk, NOVA 3-9ff
  SYSGEN dialogs 6-10ff
  utilities 9-1f
SYSGEN 6-1ff
  command 6-1
  example dialogs 6-10ff
  memory table 6-10
  testing new system 6-8f
system
  directory
    diskette 8-3
    hard disk 7-3
  diskettes 2-1f, 3-1f, 4-1f, 5-1f
  generation
    after 7-1ff or 8-1ff
    doing 6-1ff
    preparing for 2-1ff, 3-1ff, 4-1ff, or 5-1ff

testing new system 6-8f
terminal, control characters 1-1

utilities
  list of 8-1f
  loading
    diskette 8-6f
    hard disk 2-10, 3-9
utility diskette, see system diskette

VERIFY command (DOSINIT) 10-5
VIEW MODE (DASHER) 1-9

write-protect hole 1-8, 8-9

Licensed Material-Property of Data General Corporation

DataGeneral

Software Documentation Remarks Form

How Do You Like This Manual?

Title _____ No. _____

We wrote the book for you, and naturally we had to make certain assumptions about who you are and how you would use it. Your comments will help us correct our assumptions and improve our manuals. Please take a few minutes to respond.

If you have any comments on the software itself, please contact your Data General representative. If you wish to order manuals, consult the Publications Catalog (012-330).

Who Are You?

- ☐ EDP Manager
- ☐ Senior System Analyst
- ☐ Analyst/Programmer
- ☐ Operator
- ☐ Other _____

What programming language(s) do you use? _____

_____

How Do You Use This Manual?

(List in order: 1 = Primary use)

- _____ Introduction to the product
- _____ Reference
- _____ Tutorial Text
- _____ Operating Guide
- _____ _____

Do You Like The Manual?

Yes	Somewhat	No	
☐	☐	☐	Is the manual easy to read?
☐	☐	☐	Is it easy to understand?
☐	☐	☐	Is the topic order easy to follow?
☐	☐	☐	Is the technical information accurate?
☐	☐	☐	Can you easily find what you want?
☐	☐	☐	Do the illustrations help you?
☐	☐	☐	Does the manual tell you everything you need to know?

Comments?

(Please note page number and paragraph where applicable.)

From:

Name _____ Title _____ Company _____

Address _____ Date _____

SD-00742

FOLD DOWN FIRST FOLD DOWN

FIRST
CLASS
PERMIT
No. 26
Southboro
Mass. 01772

BUSINESS REPLY MAIL

No Postage Necessary if Mailed in the United States

Postage will be paid by:

Data General Corporation

Southboro, Massachusetts 01772

ATTENTION: Software Documentation

FOLD UP SECOND FOLD UP

STAPLE

DataGeneral

users group

Installation Membership Form

Name _____ Position _____ Date _____

Company, Organization or School _____

Address _____ City _____ State _____ Zip _____

Telephone: Area Code _____ No. _____ Ext. _____

1. Account Category

- ☐ OEM
- ☐ End User
- ☐ System House
- ☐ Government

2. Hardware

	Qty. Installed	Qty. On Order
M/600		
C/350, C/330, C/300		
S/250, S/230, S/200		
S/130		
AP/130		
CS Series		
N3/D		
Other NOVA		
microNOVA		
Other (Specify) _____		
_____		

3. Software

- ☐ AOS
- ☐ DOS
- ☐ SOS
- ☐ RDOS
- ☐ RTOS
- ☐ Other

Specify _____

4. Languages

- ☐ Algol
- ☐ DG/L
- ☐ Cobol
- ☐ ECLIPSE Cobol
- ☐ Business BASIC
- ☐ BASIC
- ☐ Assembler
- ☐ Interactive
- ☐ Fortran
- ☐ RPG II
- ☐ PL/1
- ☐ Other

Specify _____

5. Mode of Operation

- ☐ Batch (Central)
- ☐ Batch (Via RJE)
- ☐ On-Line Interactive

6. Communications

- ☐ RSTCP
- ☐ HASP
- ☐ RJE80
- ☐ SAM
- ☐ CAM
- ☐ 4025
- ☐ Other

Specify _____

7. Application Description

○ _____

8. Purchase

From whom was your machine(s) purchased?

- ☐ **Data General Corp.**
- ☐ Other

Specify _____

9. Users Group

Are you interested in joining a special interest or regional Data General Users Group?

○ _____

DG-05810

DataGeneral

Data General Corporation, Westboro, Massachusetts 01581, (617) 366-8911

FOLD

STAPLE

FOLD

STAPLE

FOLD

FOLD

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 26 SOUTHBORO, MA. 01772

Postage will be paid by addressee:

Data General

ATTN: Users Group Coordinator

Southboro, Massachusetts 01772